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Society for Technical Communication

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The Society for Technical Communication is the largest association of technical communicators in the world. STC is currently classifying the Body of Knowledge for the field and communicating the value of technical communication. Its volunteer leadership continues to work with government bodies and standards organizations to increase awareness and accurate perception of technical communication. Membership is open to all with an interest in technical communication. Visit the STC Web site (www.stc.org) for details on membership categories, fees, and benefits.

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About the Journal

Technical Communication is a peer-reviewed, quarterly journal published by the Society for Technical Communication (STC). It is aimed at an audience of technical communication practitioners and academics. The journal's goal is to contribute to the body of knowledge of the field of technical communication from a multidisciplinary perspective, with special emphasis on the combination of academic rigor and practical relevance.

Technical Communication publishes articles in five categories:

- **Applied research** – reports of practically relevant (empirical or analytical) research
- **Applied theory** – original contributions to technical communication theory
- **Case history** – reports on solutions to technical communication problems
- **Tutorial** – instructions on processes or procedures that respond to new developments, insights, laws, standards, requirements, or technologies
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The purpose of *Technical Communication* is to inform, not impress. Write in a clear, informal style, avoiding jargon and acronyms. Use the first person and active voice. Avoid language that might be considered sexist, and write with the journal's international audience in mind.

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Menno D.T. de Jong, Editor

Technical Communication Online … The Sequel

In my last editorial, I gave some "behind-the-scenes" information about the redesign of the PDFs of articles and special sections in this journal. At the time I wrote that editorial, the *Technical Communication* Web site was still under development. I am happy to say that the redesign process is now nearly completed. It has been a demanding process for all parties involved—particularly for the designers at EEI Communications—but I am very proud of the result. Let me take the opportunity to say a little more about the redesign of the *Technical Communication* Web site.

Apart from the printing-on-demand option, *Technical Communication* is now available online in two ways. For institutional subscribers, PDF files of all articles and special sections are available via the Ingenta Web site. This site is largely unchanged. For STC members, a new *Technical Communication* Web site was designed. The idea behind it is that if the journal goes online and many STC members no longer receive their paper edition, the online journal had better be good. This is what we tried to achieve.

Many of the underlying principles of the Web site's redesign are at the core of the technical communication discipline. Simplicity is one of those principles. The new Web site is simple and straightforward. Of course, simplicity is easy to achieve when only one issue is available, but the overall design of the Web site also ensures simplicity when there will be many volumes and issues. Usability is another important principle. We have included PDF and HTML options to optimally serve readers in different circumstances or with different preferences. The design is also meant to efficiently support users in their navigation among articles, issues, and volumes.

Another principle is that the format offers the potential to further expand the Web site's functionality. For now, authors may include additional materials about their article on the Web site. Quan Zhou and David Farkas, the first authors to use this possibility, provide *Technical Communication* readers with important illustrative materials. One of the reviewers asked for such additional information, the authors were willing to provide it, and the new Web site design made it possible. I encourage future authors to provide such materials whenever helpful. Another possible addition will be the option to react to or discuss articles.

Finally, we strove for a design that is compatible with the rest of the STC Web site as well as with the layout of the article PDF files. We wanted the Web site to have a professional and inviting look and feel.

Of course, I must qualify my earlier statement that the redesign process is now nearly complete. We will take the rest of this year to further refine the design. And even in the years to follow, it will be possible to fine-tune certain design aspects. However, the basic look and feel of the *Technical Communication* Web site and the articles will probably remain intact. In the context of corporate visual identity, a distinction is made between "big bang" changes and gradual, barely noticeable changes. The big bang is now behind us. From now on, we will focus on minor changes that will further improve the journal's quality and usefulness.

Immediately after the new Web site was launched, I received several reactions from *Technical Communication* readers. Much to my relief, all readers' reactions so far have been outright positive,

but there were also several ideas to improve specific elements or aspects of the Web site. That is no surprise: we have an entire readership of experts on these matters. I would be grateful for any further feedback on the Web site (as well as on the article PDF design). Feel free to contact me.

In This Issue

This issue includes four articles. The first two articles are by John Killoran. Both deal with an important precondition for effective business Web sites: attracting visitors, either directly or via search engines. Both studies are examples of successful combinations of serious research and practical ambitions. The articles were written first and foremost from the perspective of technical communication businesses and consultants, but the results may be easily translated to other contexts as well. In the first article, a general approach is chosen, assessing the usefulness of online and offline referrals to business Web sites. In the second article, the focus is narrowed to the functioning of search engines and the use of search engine optimization techniques.

The third article in this issue is by Lex van Velsen, Thea van der Geest, and Michaël Steehouder. They reflect on the growing importance of personalization in (computer-mediated) communication, and on the way technical communicators may contribute to the (user-centered) design of such personalized systems.

The fourth article is by Quan Zhou and David Farkas. I have already mentioned it because it is the first article with additional information on the *Technical Communication* Web site. The article describes a text format for print and online documents that helps readers navigate through a document and understand the vital information in it. The authors not only describe the format extensively but also discuss its usefulness, drawbacks, and requirements.

Frank R. Smith Outstanding Article Award 2009

Each year, an independent jury of three researchers and practitioners selects one outstanding article and up to three distinguished articles that appeared in *Technical Communication* during the previous calendar year. This year's jury members were Saul Carliner (chair), Vici Koster-Lenhardt, and last year's winner, Roger Munger.

The award honors the memory of Frank R. Smith, during whose 18 years as editor this journal became established as the flagship publication of STC and of the profession.

This year, the jury selected one outstanding and one distinguished article.

2009 Outstanding Article in *Technical Communication*

Han Yu. Putting China's technical communication into historical context: A look at the Chinese culinary instruction genre. (May 2009)

> "An analysis of recipe books that concludes there's no recipe book for cross-cultural communication. This article raises questions about Western-based conceptions of Chinese culture, and challenges readers to develop, instead, a deeper understanding of that culture and its context."

2009 Distinguished Article in *Technical Communication*

Nicole St. Germaine-Madison. Localizing medical information for U.S. Spanish-speakers: The CDC campaign to increase public awareness about HPV. (August 2009)

> "A solid research study that offers practical insights into cross-cultural communication."

Promoting the Business Web Sites of Technical Communication Companies, Consultants, and Independent Contractors

John B. Killoran

Abstract

Purpose: This article explores how marketing communication in traditional media and new media leads people to the Web sites of technical communication companies, consultants, and independent contractors, and to what extent these Web sites then contribute to recruiting clientele.

Method: The study surveyed an international sample of 240 technical communicators who maintain Web sites to market their services, and then interviewed half of these survey respondents.

Results: Aside from drawing in a moderate portion of clientele directly, these Web sites also helped recruit clientele who originated through such traditional marketing communication as referrals and networking. Yet such traditional communication tended not to be as useful in leading people to these sites as new-media communication, such as search engines and e-mail. Marketing communication's usefulness in leading people to a Web site is associated with that Web site's levels of success in recruiting clientele.

Conclusion: A Web site's efficacy may thereby depend in part on the support of other communication, especially communication sharing a similar medium.

Keywords: technical communication companies, consultants and independent contractors, marketing, Web sites, genre systems

Practitioner's Takeaway

- The business Web sites of technical communication companies, consultants, and independent contractors recruit a moderate portion of their clientele directly.
- Business Web sites also help recruit clients who originate through referrals and networking.

- Technical communicators report how search engines, Web links, e-mail, print marketing materials, networking, and referrals successfully directed traffic to their Web sites.

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Marketing Practices of Independent Technical Communicators

For the quarter of STC's membership who are consultants or independent contractors (STC, 2000, 2002, 2004), a significant part of work is finding new work. Marketing one's self or one's business, always an ongoing preoccupation for independent technical communicators, can be even more critical in a challenging economic climate, when established clients might be cutting back on new projects and few new prospects are available to be courted. To understand how independent technical communicators reach out to prospects and how they might do so more effectively, this article investigates one part of their marketing repertoire: their business Web site. As a legacy of the 1990s' dot-com boom and bust, we can now take for granted that such a Web site, no matter how well written and designed, typically cannot market technical communication services on its own. This study instead approaches such Web sites by following other marketing channels, such as referrals and networking, that would lead prospects to visit these Web sites as one step among others in technical communicators' overall marketing strategy.

It is clear from the discourse circulating within the technical communication community that marketing is among the main concerns of independent practitioners (hereafter "independents"). Marketing issues are regularly raised on the listserv of the STC Consulting and Independent Contracting SIG (mailman.stc.org/mailman/listinfo/stccicsig-l). Tellingly, in 2006, some of these SIG members founded a separate discussion board devoted exclusively to marketing (finance.groups.yahoo.com/group/cic-stc_marketing/). The SIG also published an online book featuring several chapters that discuss marketing (STC Consulting and Independent Contracting SIG, 2007).

As well, marketing has been the subject of presentations at STC conferences and of advice articles in *Technical Communication* and *Intercom*. For instance, Poe (2002) observed that many large-business marketing practices would not apply to independents and instead reviewed marketing advice that independents could apply to reach specialized prospects, including building relationships with prospects and communicating with prospects through proposals and presentations (pp. 178–179). Walsh (2004) advised those providing technical communication services on how to network and develop contacts, especially within organizations. Broach, Gallagher, and Lockwood (2006) interviewed a panel of three independents about their marketing practices, which collectively included networking, cross-functional networking with professional peers, referrals, business phone listings, cold calls, direct mail, promotional gifts, Web advertising, publishing in print and Web venues, and, yes, maintaining a business Web site. The authors concluded that networking was the most worthwhile of these methods, and the panel estimated that networking alone occupied two to four days' worth of their time per month.

A question about marketing methods was regularly asked in the periodic salary surveys of STC member consultants, independent contractors, and temp agency employees (STC, 2000, 2002, 2004). These surveys found that referrals (overwhelmingly) and reputation had generated clientele for majorities of respondents. Each of the remaining marketing methods—which included, roughly in descending order of popularity, networking, temp agencies, advertisements, cold calls, and brokers—had generated clientele for minorities of respondents. Web sites were not included among these response options, though perhaps they were understood to be a type of advertisement. By contrast, a 2005 survey of members of STC's Consulting and Independent Contracting SIG did ask about business Web sites along with ten other marketing methods and found Web sites to be among the more useful (STC Consulting and Independent Contracting SIG, 2005a, p. 7). The two most useful methods were referrals (again overwhelmingly) and then networking. These were followed by three methods all rated within close range of each other: attending meetings and conferences, handing out business cards, and publishing a Web site. In particular, 41% of respondents rated publishing a Web site as "very valuable" or "extremely valuable," a percentage that jumped above the 50% level when excluding the 22% of respondents who apparently did not have a Web site (STC Consulting and Independent Contracting SIG, 2005b, p. 10). Among the remaining, less useful methods were distributing print promotional

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materials, such as brochures, flyers, and resumes; publishing print or electronic newsletters; and four other lower-rated methods.

Collectively, these publications underscore marketing's importance among independents and shed light on independents' actual practices, yet the breadth and brevity of these publications has left them unable to investigate any one marketing practice in depth or in conjunction with other practices. For instance, surveys asking respondents to separately rate each of several marketing methods can inadvertently suggest that each method works in isolation, whereas in practice a prospect might become a client as a result of varied and repeated marketing communication. This article takes a different approach by investigating how independents' Web sites work in conjunction with other marketing communication.

This article builds on a previous article that focused on the role of search engines in particular as a promotional resource for independents' Web sites (Killoran, 2009). That article demonstrated that Web sites do indeed serve as a source of some technical communication clientele: Almost half the independents surveyed received at least 10% of their clientele primarily through their sites. That article also reported that search engines are among the most important means by which people are led to these sites, and it discussed the role of search engines as an intermediary Web site audience that would lead to the primary audience of prospective clients.

Looking beyond just search engines, this article considers a broad range of marketing communication, including referrals, networking, and other communication reviewed above. It investigates how such communication can lead prospects to business Web sites and to what extent those Web sites then contribute to winning prospects over. First, I introduce a theoretical framework, genre systems, to help conceptualize how the seemingly distinct communication acts that lead one unto another during marketing "courtship" may be thought of as a cohesive sequence of communication. Using this framework, I review research on how various kinds of communication lead people to visit business Web sites. Turning to independents' business Web sites, I describe how I surveyed 240 independents who maintain Web sites to market their technical

communication services, and as well conducted follow-up interviews with 126 of these survey respondents. The survey results show the extent to which their Web sites not only served as a source of some clientele but also helped recruit clientele who originated through other means. The survey results also show that some marketing channels are more helpful than others in leading people to these Web sites, and drawing on the follow-up interviews, I illustrate how each of these channels does so. The article concludes by emphasizing how independents can draw on these experiences of their professional peers to expand their own repertoire of marketing practices.

Accomplishing Employment Goals Through Genre Systems

Many work-related goals that require the participation of various people get accomplished not through single types of communication, or genres, but through systems of different genres that the various participants might contribute. Bazerman (1994) characterized genre systems as "interrelated genres that interact with each other in specific settings" (p. 97) and noted that the genre systems ascribe order to the collection of genres (p. 98). Yates and Orlikowski (2002) characterized genre systems as "organizing structures…that provide expectations about the purpose, content, participants, form, time, and place of communicative interaction. In other words, both genres and genre systems carry expectations about why, what, whom, how, when, and where" (p. 16). For instance, receiving a business card suggests different situations, participants, purposes, and follow-up genres than does receiving a menu or a speeding ticket or a love letter. In each of these situations, cultural expectations of the genre system guide most recipients in how to respond with an appropriate follow-up genre—what Freadman (1994) calls "uptake" (p. 46)—and thereby enable a goal to be accomplished.

The iconic example of a genre system, mentioned by several researchers (Bazerman, 1994; Killoran, 2006; Yates & Orlikowski, 2002; Yates, Orlikowski, & Rennecker, 1997), is the sequence of genres used to bring employers together with prospective employees:

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job ads leading to job application letters and resumes, which in turn lead either to rejection letters or phone requests for interviews, which in turn lead to interviews, and then to job offers or more rejection letters, and so forth. This system is familiar enough that it functions reasonably well even though its participants are typically strangers to each other. Indeed, the system is familiar enough that it has migrated from paper to various Internet media with only moderate changes to its systemic character (Korkki, 2009).

An analogous situation exists among the strangers who, in their roles as independent technical communicators and prospective clients, seek to bring themselves together so that technical communication work gets done. Though the communication between independents and prospective clients may appear less systemic than the relatively formal communication between employers and prospective employees, independents and prospects do not usually act aimlessly. Rather, they draw on their repertoire of appropriate genres and genre systems. An independent might start by networking at professional events, cold calling local companies, or participating in online industry-specific forums. A prospective client might start by asking industry colleagues for referrals, contacting a local STC chapter, or placing an ad on an Internet job board. No doubt, just as many resumes within the employment genre system lead no further than a rejection letter, so too do many such initial communication ventures lead to dead ends. Despite a sometimes frustratingly low level of uptake, when enough such initial ventures lead, through intervening genres, to a genre like a signed work contract, the successful genre system is perpetuated. Somewhere amid these genres can be an independent's business Web site. It can therefore be insightful to apply the genre system framework to understand what genres and what corresponding genre systems might lead prospects to an independent's Web site and what levels of success can be gained by doing so.

Genre Systems Leading to Web Sites

Among the Web's achievements over its first two decades are not just millions of Web sites but also growing expectations of where to find Web sites,

when and why we should find them, what they will enable us to do, and how we will do it—collectively, the components of emerging genre systems. In principle, the Internet's hypertext architecture underpins Web-based genre systems—one genre literally links to another—though in practice not all links convey clear expectations of why they are taking us from genre A to genre B and what we can expect when we get there, a deficiency whose remedies are a main objective of Web navigation guidelines (Farkas & Farkas, 2000). Search engines are likewise predicated on genre systems: Users visit search portals not to linger there but with the expectation that they will then be taken to search engine results pages and then to their sought-for Web page. Search engines almost always return a myriad of ranked links that match users' search queries, but do not always foreground the specific genre users had sought, thereby sometimes frustrating users' expectations of the genre system. To increase the genre system's reliability, researchers have proposed that search engines specify the genres of the pages they return (Kennedy & Shepherd, 2005). Beyond the Internet, communication across various media now points us to Web sites, whether explicitly (e.g., "For more information, visit www…") or implicitly (e.g., simply listing a Web address), and expectations have been increasing for the kinds of genres we should find when we follow such leads. Apart from cases in which we have already bookmarked a Web address or intuitively guess a Web address, Web users must follow some such leads in order to find a Web site appropriate for their situation, and success could reinforce the genre system that led them there.

Within the technical communication community, some practitioners and researchers have offered advice on various kinds of Internet communication that would lead people to Web sites. For instance, Deschampes-Potter and Plant (2008), Fugate (2000), and Killoran (2009) addressed the role of search engines. In addition to search engines, Caldanaro and Pait (2001) and Leonard-Wilkinson (2002) discussed other Internet-based channels: links from related sites, signature blocks in e-mail postings, e-mailed newsletters and press releases, and postings to bulletin boards, newsgroups, and listservs.

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Most research on the communication channels that lead people to visit business Web sites in particular, and the efficacy of these channels, comes from fields like marketing. Though marketing studies tend to focus on large business-to-consumer (B2C) sites, they can nevertheless be read for insights they might offer about the typically small business-to-business (B2B) sites of independents. While much attention is justifiably devoted to the role of search engines, one study found that the sites of small businesses in one industry seemed more accessible through links from other industry-related sites because the small business sites were often overlooked or poorly ranked by search engines (Fry, Tyrrall, Pugh, & Wyld, 2004), a condition shared by some technical communication business sites (Killoran, 2009). Most businesses tend to tap into more than one potential channel to lead people to their sites. For instance, in a survey of advertisers who had used some form of search engine marketing, majorities also used e-mail marketing and Web display ads, among other channels (Search Engine Marketing Professional Organization [SEMPO], 2008, p. 84). Web designers have recommended that any communication that includes a company's name should also include the company's Web address, including print documentation such as business cards, letterhead, brochures, and print ads (Geissler, 2001, p. 494).

Among studies that have compared the efficacy of various communication channels, one found that Web users were more likely to recall hearing about specific sites through offline references (offline ads and news reports) than through online references (in descending order of importance: online ads, links from other sites, search engines, Web directories, online news reports, e-mail, newsgroups, and discussion groups); however, this study did not inquire into whether people "consummated" the genre systems by actually following up on such references and visiting the sites in question (Drèze & Zufryden, 2004). Other studies have found that actual B2C site traffic is more strongly correlated with online advertising than with offline advertising (Graham & Havlena, 2007; Ilfeld & Winer, 2002). However, one study found that paid advertising of both kinds, online and offline, brought new customers who contributed less longer-term value to a firm than did an assortment of free references to

the firm's site derived from search engines, links from other sites, media coverage, and referrals (Villanueva, Yoo, & Hanssens, 2008). Such results suggest that genre systems that endure without financial support might attract more authentic participation than genre systems sustained only with such extraneous support. Among the free communication channels, links from other sites have been positively correlated with B2C site traffic (Ilfeld & Winer, 2002), and indirect measures of word of mouth have found it also to be positively correlated with B2C site traffic (Graham & Havlena, 2007; Ilfeld & Winer, 2002). However, another study of free online communication channels (in this case, search engines, newsgroups, listservs, bulletin boards, and chatrooms) found that, when factoring in a business's likely labor costs of pursuing such free channels, they are not cost effective for selling low-priced consumer products; however, they might be cost effective for higher-priced products and services (Langford, 2000)—such as, perhaps, technical communication services.

These Web site promotional channels tap into a variety of genre systems, some drawing from the Web itself and the Internet, but some also from other media, such as print and broadcasting, and some from speech communication, such as referrals that might come through private conversations. For convenience, we can organize all the channels discussed above according to their medium of communication:

- New media, such as the Web outlets of traditional media, search engines, online ads, links from other sites, and links in e-mail postings and postings to listservs, bulletin boards, newsgroups, and more recently social networking and other Web 2.0 media
- Traditional media, including various kinds of promotional print documents such as direct mail letters, brochures, and business cards, as well as advertising and news coverage in mass media such as newspapers, radio, and television
- Speech communication, such as networking, presentations at conventions or conferences, cold calls, and referrals from friends and colleagues

Not all the media and channels pursued by large companies would apply with the same efficacy, or even apply at all, to the practices of small companies, let alone the practices of independent technical

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communicators, who typically work solo or run very small companies. For instance, a commercially sponsored survey of American small businesses found that, of those with a Web site, the majority spent less than three hours a week marketing their site (WebVisible and Nielsen Online, 2009, p. 2), suggesting that some of the more labor-intensive marketing practices would likely not be widely adopted by independents. Similarly, the survey of members of the STC's Consulting and Independent Contracting SIG discussed above found that only 14% devoted more than $1,000 per year to marketing (STC Consulting and Independent Contracting SIG, 2005b, p. 10), suggesting that the more costly marketing practices of large businesses, such as mass media advertising, would also likely not be widely adopted by independents.

To gain insight into the channels independents do use to lead people to their business Web sites, and to assess the efficacy of these channels and of the Web sites themselves, I collected an international sample of Web sites marketing technical communication services. Previous studies of technical communicators' marketing practices have tended to rely on surveys (STC, 2000, 2002, 2004; STC Consulting and Independent Contracting SIG, 2005a, 2005b), and accordingly, I surveyed the principals behind these services. As this study sought insight into potentially complex and subtle relationships among various marketing genres—relationships difficult to probe with a quantitative method like a survey—I thereby followed up by interviewing willing survey respondents by e-mail. In the next sections, I describe the sampling and recruitment procedures, the survey questionnaire, and the interview process.

Research Methods

Participants and Their Web Sites

To collect a sample of Web sites of independents offering technical communication services, I examined hundreds of potential sources that might list relevant links or URLs:

- Google, Yahoo, and MSN search engines

- Web directories, notably the various country-specific Yahoo directories and the Open Directory Project's directory
- All STC chapter sites and sites of overseas professional communication organizations, notably a partial directory of members of the Independent Authors SIG (a group within the U.K.-based Institute of Scientific and Technical Communicators)
- Various writing-related commercial, communal, and individuals' sites, such as WritersUA ("UA" stands for "user assistance"), a technical writing Web ring, and a few independents' sites that collegially link to their peers
- General online business sources, such as LinkedIn, online yellow pages, and commercial sites accepting postings by freelancers
- The listserv of STC's Consulting and Independent Contracting SIG
- Articles discussing consulting and independent contracting, marketing, or Web sites in STC's *Intercom*

Searches through such promising sources continued throughout the winter and spring of 2007 until most of the technical communication business sites found with each new source tended to duplicate those already found. A total of 65 sources can be credited for contributing to a sample that surpassed a thousand business sites, representing mainly solo consultants and independent contractors but also a number of partnerships and small companies with employees.

As further details about the sampling, pilot testing, and recruitment procedures have already been published (Killoran, 2009, 2010), here I present only a summary. After culling the sample of potentially abandoned sites, I e-mailed survey invitations to 638 independents, from whom I received a total of 240 usable questionnaires after two additional rounds of reminder e-mails. After accounting for 6 unusable questionnaires and 17 undeliverable e-mail addresses, the overall response rate was 39.6%.

Survey Questionnaire

The survey questionnaire asked nine questions, some with multiple parts. The first three questions

are pertinent to this article and may be found in the appendix. The first of these three questions has already been alluded to above and is described more extensively in Killoran (2009). That question asked participants to identify the percentage of their technical communication clientele who originated primarily because of their business Web site. The follow-up question asked how much the Web site helped in getting clientele when other sources (such as referrals and networking) were primary, and not the Web site itself. Participants were offered response options ranging from 0 (helped "not at all") to 3 (helped "a lot"), with an additional option indicating "don't know."

The third question asked participants how much various promotional channels helped in leading people to their Web site. Ratings for the helpfulness of various promotional channels could offer a rough proxy measure of the strengths of various genre systems. The marketing research discussed above revealed how a wide variety of Web and off-Web genres in channels across various media might lead people to a Web site, so to make responding more manageable, response options presented channels grouped into three kinds of media: new media, traditional media, and speech. For further discrimination, each of these was subdivided into distinct communication channels or sets of closely related channels.

In the case of new-media channels, the literature accorded search engines and links from other Web sites enough attention that each merited a response option of its own. Unlike these two, which are largely beyond the independents' direct authorial control, other Internet channels are within their authorial control, and these were grouped together as one response option. Thus, respondents were presented with three response options based in new media, worded as follows:

- WEB: Search engines
- WEB: Links from other Web sites, not including search engines
- INTERNET: Web address included with your Internet-based communication (examples: e-mail and attachments, listserv postings, submissions to job boards)

In the case of traditional media, the literature makes no mention of independents' widespread marketing use of such costly, consumer-oriented mass media as radio, television, and newspapers, so the response options focused on business-oriented print genres. Independents' own print communication was divided into two response options: public materials, typically printed in bulk quantities and often distributed relatively indiscriminately; and private correspondence, usually composed for or addressed to a specific audience, sometimes in response to previous communication and hence already part of an ongoing genre system. These are both within independents' authorial control, so as with the new-media channels, another option was added encompassing print genres beyond their authorial control. Thus, respondents were presented with three print-based response options, worded as follows:

- PRINT: Web address imprinted on your public promotional materials (examples: business card, brochure, advertisements)
- PRINT: Web address included in your private print correspondence (examples: prospecting letters, resume)
- PRINT: Web address in print documents of other organizations (examples: business directories, associates' or clients' documents, professional journals, newsletters)

In the case of the speech-based channels, the track record of referrals as independents' top marketing method justified their receiving a response option of their own. Note that whereas independents often learn that a prospect was referred to them, they might not learn such minutiae as whether the particular channel that led the prospect to check out their Web site was a phone conversation, an e-mail posting, or a passed-on business card, so referrals to some degree resist being defined as just a speech channel and accordingly were not labeled as such. Included in the remaining speech channels was networking, which has a marketing track record among independents that is second only to referrals. Thus, respondents were presented with two final response options:

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- SPEECH: Web site mentioned in your speech communication (examples: phone and face-to-face networking, professional presentations)
- REFERRALS: Web site mentioned by people outside your business

In sum, response options listed a total of eight distinct channels or sets of closely related channels, some accompanied by a parenthetical list of genre examples to cue recognition and recall. Respondents were asked to rate the helpfulness of each of these eight sets of channels in leading people to their site on the same 0–3 scale used in the previous question, with additional response options indicating "don't know" and "not applicable."

The survey concluded by asking respondents if they would be willing to participate in a brief e-mail interview; 154 initially consented, though only 126 went on to submit interview responses. Nonrespondents were e-mailed twice more at intervals of one to two weeks, and those who volunteered an explanation for their nonresponse or tardy response typically mentioned time constraints. As such time constraints had been expected from a population of busy professionals, I limited all interviews to a maximum of a half-dozen open-ended questions. These questions were based on each participant's particular Web site features and survey responses and so varied from participant to participant. Questions that are pertinent to genre systems and the promotion of business Web sites could not always be squeezed into the brief interviews, but when they were, they typically singled out sets of channels in survey question 3 (see appendix) that had received relatively high ratings or, less commonly, low ratings, and asked for elaboration.

Survey Results

The survey results can reveal the degree to which both independents' business Web sites and the channels (and genre systems) that lead to them are useful. As indicated above, a previous publication discussed the responses to the first survey question about the percentage of technical communication clientele who originated primarily because of these sites (Killoran,

2009). To explore the place of independents' Web sites within marketing genre systems, I only summarize those responses here:

- A slight majority of participants (53%) reported that less than 10% of their technical communication clientele originated primarily because of their Web sites.
- A large minority of participants (43%) reported that at least 10% of such clientele originated this way, though this level of at least 10% often did not reach 20%, let alone 50%.
- A few participants (5%) did not know.

Thus, even though they maintained Web sites to market their services, most participants must have been getting most of their clientele primarily through other marketing methods.

These other marketing methods figure into the follow-up survey question, which asked how much their Web site helped recruit technical communication clientele who originated through these other methods. As shown in Table 1, few participants rated their site as not helping at all. Rather, ratings were fairly evenly distributed across the range from helping "a little" to helping "a lot." Such ratings indicate that even such popular and successful marketing methods as referrals and networking can be meaningfully supported by a Web site playing a secondary marketing role.

Table 1: Helpfulness of business Web sites in recruiting technical communication clientele originating primarily through referrals, reputation, networking, and other offsite means

Web site helpfulness	Percentage of respondents
0 - Not at all	8
1 - A little	30
2 - Moderately	32
3 - A lot	25
Don't know	6

Percentages do not add up to 100 because of rounding.

Of course, prospects would first have to find these Web sites, which was the object of the third survey question about how helpful each of the eight sets

of channels was in leading people to these sites. As shown in Table 2, the traditionally popular marketing methods of referrals and networking (with networking understood to constitute a considerable portion of the "speech" channel here) do not appear to have been especially helpful in leading people to Web sites, each receiving a mode rating of only 1 on the 0–3 scale, signifying helping "a little." Instead, participants tended to rate new-media channels as the most helpful: search engines were the only channel to receive a mode rating of 3, helping "a lot"; and participants' own Internet communication, with the second highest percentage of "3" ratings, received a mode rating of 2, helping "moderately."

To analyze more precisely the relative efficacy of these eight sets of channels, each pair among the eight was contrasted using a sign test. For each pair, only the ratings of participants who provided two numerical responses could be contrasted, which in effect removed the ratings of participants who were less informed about the pair of channels (because they selected a "not applicable" or "don't know" response). In a sign test, tied ratings are also typically removed, and the remaining pairs of ratings are contrasted to determine how many each side "won"; however, removing tied ratings increases the likelihood of type I errors (false positives) in declaring a clear "winner." As some pairs of promotional channels received high proportions of tied ratings, a more conservative approach was followed in which tied ratings were distributed equally to each side of the pair being contrasted. Also, to compensate for the increased likelihood of type I errors when performing multiple comparisons with the same data, significance

Table 2: Ratings of the helpfulness of promotional channels in leading people to business Web sites, in percentages[†]

Web site promotional channels	A lot 3	Moderately 2	A little 1	Not at all 0	Don't know	N/A	Blank
WEB: Search engines	**35**	24	19	10	9	2	2
WEB: Links from other Web sites, not including search engines	15	**22**	**22**	20	9	9	3
INTERNET: Web address included with technical communicator's Internet-based communication	25	**35**	19	11	8	2	1
PRINT: Web address imprinted on technical communicator's public promotional materials	16	**27**	26	14	9	6	2
PRINT: Web address included in technical communicator's private print correspondence	10	**26**	**26**	20	9	7	3
PRINT: Web address in print documents of other organizations	4	14	23	**28**	14	15	2
SPEECH: Web site mentioned in technical communicator's speech communication	13	20	**30**	21	7	8	2
REFERRALS: Web site mentioned by people outside the business	15	19	**28**	16	17	4	2

Note: Mode rating for each Web site promotional channel is shown in bold type.
[†] Percentages may not add up to 100 because of rounding.

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levels for the pairwise comparisons were adjusted by following a layered method proposed by Ryan (1960).

Table 3 shows the sign test results, with the eight sets of channels rearranged roughly from most helpful to least helpful and grouped into three clusters:

- A most-useful cluster of the two sets of new-media channels mentioned above—search engines and independents' own Internet communication—which showed no significant difference in how participants rated one over the other
- An intermediately useful cluster encompassing most sets of traditional media channels, speech, and referrals, plus one new-media channel—links from other sites, not including search engines—which likewise showed no significant differences in how participants rated any one over any other
- A least-useful cluster representing a single set of channels, print documents of other organizations, which, with one exception, was rated as significantly less helpful than each of the other sets of channels

Apart from that one exception, between any two sets of channels from different clusters is a statistically significant difference in ratings. Considering the conservative statistical procedure that was followed to accommodate tied ratings, such consistent differences underscore how independents' long-established marketing methods, whether referrals, networking, or print communication, tend not to be as useful as some new-media marketing communication in leading people to another kind of new-media marketing communication, a business Web site.

Efficacy of Web Site Genre Systems in Recruiting Technical Communication Clientele

To assess the efficacy of marketing genre systems that lead to and through independents' business Web sites, we can track the genre systems' performance starting from the contributions of the genres of promotional channels leading people to these sites and ending with the contributions of the Web site genre itself recruiting technical communication clientele. This can be done by analyzing how responses to survey question 3 are associated with responses to questions 1 and 2. For the sake of clarity, each survey question's range of numerical response options will be divided

into just two options signifying a greater or lesser contribution to the Web site marketing genre system. Thus, for question 3, ratings of the helpfulness of each set of promotional channels in leading people to these sites will be divided into the more helpful (3 or 2 on the scale from 0 to 3) and the less helpful (1 or 0). Similarly, for questions 1 and 2, measures of Web sites' primary and secondary marketing roles, respectively, will be divided according to their greater and lesser contributions in recruiting clientele:

- For the percentages of clientele recruited primarily through Web sites in question 1, the greater contribution of Web sites recruiting double-digit percentages of their owners' clientele (10–100%; $n = 103$) and the lesser contribution of Web sites recruiting only single-digit percentages (0–9%; $n = 117$)
- For the helpfulness of Web sites recruiting clientele who originated offsite in question 2, the greater contribution of Web sites rated as more helpful playing such a secondary marketing role (3 or 2 on the scale from 0 to 3; $n = 137$) and the lesser contribution of Web sites rated as less helpful playing such a secondary marketing role (1 or 0; $n = 89$)

As can be seen in Table 4, chi-square tests tend to show statistically significant associations between the level of contributions made by sets of promotional genres leading people to these Web sites and the level of contributions made by the Web sites themselves in recruiting clientele. This tendency is widespread across all eight sets of promotional channels when Web sites are playing a secondary marketing role. In particular, when Web sites are playing such a secondary role, some other marketing communication must be playing a primary role: Typically, independents would already have been communicating with their prospects directly, perhaps through speech or independents' own Internet postings or print marketing documents. Revealingly, it is these sets of direct communication channels that show some of the highest levels of statistical significance among helpfulness ratings in the "secondary recruiting" column in Table 4, especially when contrasted with the more modest levels shown among the corresponding helpfulness ratings in the "primary

Table 3: Sign test z values and tallies of higher, lower, and tied ratings in pairwise contrasts of helpfulness ratings of Web site promotional channels†

	Most-Useful Cluster			Intermediately Useful Cluster				Least-Useful Cluster
	WEB: Search engines	INTERNET	PRINT: Public	WEB: Links	REFERRALS	PRINT: Private	SPEECH	PRINT: Others'
WEB: Search engines	—	1.27 82^+ 63^- $56^=$	3.14* 94^+ 50^- $44^=$	4.16*** 86^+ 29^- $67^=$	3.78** 87^+ 36^- $52^=$	4.52*** 100^+ 38^- $45^=$	4.71*** 99^+ 34^- $52^=$	7.19*** 104^+ 12^- $45^=$
INTERNET		—	2.94* 68^+ 26^- $101^=$	2.91* 77^+ 37^- $66^=$	3.59** 80^+ 31^- $68^=$	4.43*** 83^+ 21^- $87^=$	5.15*** 98^+ 26^- $66^=$	6.48*** 99^+ 15^- $50^=$
PRINT: Public			—	0.38 56^+ 50^- $64^=$	0.62 50^+ 41^- $78^=$	1.69 42^+ 18^- $126^=$	1.86 60^+ 34^- $88^=$	4.38*** 69^+ 13^- $77^=$
WEB: Links				—	0.47 53^+ 46^- $64^=$	0.62 60^+ 51^- $59^=$	1.23 65^+ 48^- $56^=$	3.42** 66^+ 23^- $62^=$
REFERRALS					—	0.70 48^+ 38^- $79^=$	1.69 50^+ 27^- $94^=$	3.84** 65^+ 17^- $69^=$
PRINT: Private						—	1.13 53^+ 37^- $86^=$	3.21* 60^+ 19^- $77^=$
SPEECH							—	2.63 57^+ 23^- $78^=$
PRINT: Others'								—

Note: Each cell's sequence of three numbers (x^+, y^-, $z^=$) shows the tallies of higher ratings (x^+), lower ratings (y^-), and tied ratings ($z^=$), respectively, attained by the promotional channel listed in the row heading in contrast to the channel list in the column heading. Within-subject pairs that include a non-numerical response ("not applicable," "don't know," or a blank response) were not tallied, so $n < 240$ for each cell.

† Computation of the sign test z values also incorporated tied ratings, which were distributed equally to the tallies of higher and lower ratings (and in cases of an odd number of tied ratings, one tied rating was removed so that each side received an equal number). To maintain a $p < 0.05$ significance level for the familywise comparison among eight categories, significance levels for the pairwise comparisons were adjusted by following a layered method proposed by Ryan (1960).

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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Table 4: Numbers of more-helpful and less-helpful ratings of Web site promotional channels by participants' assessments of their Web sites' greater and lesser contributions as primary and secondary recruiting tools, and chi-square values for the frequency distributions[a]

Contribution of Web Site Promotional Channels		Contribution of Web Site					
Promotional Channels	Helpfulness Leading People to Web Sites	Primary Recruiting[b]			Secondary Recruiting[c]		
		More (10–100%)	Less (0–9%)	X^2	More (3, 2)	Less (1, 0)	X^2
WEB: Search engines	More (3, 2)	82	53	23.12***	97	42	9.82**
	Less (1, 0)	17	51		30	34	
WEB: Links	More (3, 2)	50	37	8.94**	61	26	4.56*
	Less (1, 0)	34	62		52	43	
INTERNET	More (3, 2)	68	68	2.09	102	38	22.26***
	Less (1, 0)	28	43		26	41	
PRINT: Public	More (3, 2)	44	56	0.00	72	28	9.79**
	Less (1, 0)	41	52		46	46	
PRINT: Private	More (3, 2)	40	44	0.20	62	22	8.98**
	Less (1, 0)	47	59		54	49	
PRINT: Others'	More (3, 2)	26	13	6.93**	33	9	6.73**
	Less (1, 0)	50	68		66	52	
SPEECH	More (3, 2)	43	30	8.21**	59	16	14.08***
	Less (1, 0)	44	73		60	56	
REFERRALS	More (3, 2)	47	28	12.46***	57	20	8.28**
	Less (1, 0)	37	66		54	48	

[a] Not included are cases in which either of the analyzed pairs of survey responses (from questions 1 and 3 in the "primary recruiting" columns, and from questions 2 and 3 in the "secondary recruiting" columns) resulted in a non-numerical response ("not applicable," "don't know," or a blank response). So $n < 240$ for each cell.

[b] The columns headed "primary recruiting" list the numbers of participants who report greater (10–100%) or lesser (0–9%) percentages of their clientele originating primarily because of their Web site.

[c] The columns headed "secondary recruiting" list the numbers of participants who rated their Web site's helpfulness as relatively greater (3 or 2) or lesser (1 or 0) in recruiting clientele originating primarily offsite.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

recruiting" column. By contrast, when Web sites are playing a primary marketing role, perhaps no other direct communication channels have yet been opened between independents and their prospects, and prospects would instead have had to find these Web sites through such indirect channels as Web searches, links from other sites, and referrals. Revealingly, it is these sets of indirect communication channels

that show some of the highest levels of statistical significance among helpfulness ratings in the "primary recruiting" column, especially when contrasted with the slightly more modest levels shown among the corresponding helpfulness ratings in the "secondary recruiting" column.

These general associations between the marketing contributions of promotional genres and the Web site genre, together with the revealing patterns between corresponding levels of statistical significance in Web sites' primary and secondary marketing contributions, reinforce the possibility that these promotional channels are contributing to the Web sites' marketing successes: Promotional channels, when working more effectively to lead people to these Web sites, might be enabling these sites to recruit more clients. A business Web site's success in recruiting clientele might thereby in part be a consequence of the success of its genre systems.

Independent Technical Communicators' Experiences with Web Site Promotional Channels

More insight into how each of these sets of channels works to lead people to independents' Web sites can be gleaned from participants' interview responses. Here, I proceed roughly in chronological order by discussing first the long-established channels of speech communication and referrals, then the various kinds of print channels, and finally the new-media channels involving the Internet in general and the Web specifically.

Speech Communication
Speech communication's rating only among the intermediately helpful cluster of channels, despite encompassing the ever-successful marketing method of networking, could suggest that a Web site may be somewhat redundant when one already has the ear of a prospect. Yet several participants mentioned a variety of networking occasions in which they would introduce their Web site into the conversation, such as chamber of commerce meetings and civic events, professional organization meetings, trade

shows, conference presentations, workshops, and classes. Private occasions in which participants would introduce their Web site included cold calls to local businesses, prospects' incoming calls to them, and client interviews.

Introducing their site into the conversation seemed to be a socially acceptable way to keep open the often tenuous contact established while networking, or to continue a sales pitch without seeming too pushy, or as a prelude to further conversation, such as in advance of a meeting with a prospect. For instance, one professional writer described how a brief reference to her site would enable her to subtly continue promoting her business while maintaining a more casual conversation:

> I always mention my web site whenever I give my business card to anyone. If people are checking out my web site in the comfort of their office or home, they'll probably learn more about my services [than] if I was bending their ear at a loud networking event when they wanted to work the crowd. (Though I do try to give a short 2 sentence explanation of my business in person too.) I'm not into hard selling, so when I do talk to people in person or on the phone, I'll try to find out what they need, state that I can do it for them (if I can), and then direct them to my web site. Then I'll follow up in a day or two via phone or email.

She rated speech communication such as this as helping moderately in leading people to her site.

Several participants reported that introducing their Web site during phone conversations was particularly helpful, such as by making cold calls a bit "warmer," as one respondent put it. One participant described his usual cold-call procedure as involving a sequence of several genres, including his Web site:

> The process usually goes something like this: I identify a new prospect and send one or two emails; I then follow up with phone calls; once I get the prospect on the phone and tell them about the services I offer, their second request is usually

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for samples of work I've done for other clients and I direct them to the web site (first question is always about pricing).

He rated both his Internet communication (the e-mails) and his speech communication (the phone calls) as helping a lot in leading people to his site, much more useful than most other channels, which were of little or no help.

This participant singled out samples of his work as the particular genres that prospects most wanted to see. Many other participants echoed this observation, some indicating that prospects' questions about samples served as an opportunity enabling them to introduce their site, and some describing samples as an inducement they would raise to encourage visits to their site. For instance, one participant described how, at points in conversations when she introduced her Web site, often either she or her prospects would be mentioning samples of her work:

> I almost **always** give out my site to any new prospect and tell them that they can find out more about my qualifications as well as look at my online sample portfolio…. If I am talking to someone on the phone I either tell them the site or I ask for their email so I can email the link to them. Clients always want to see samples, and this is a very easy way for them to do it on their own schedule. If someone asks me for samples I will direct them to the specific sample page.

She rated such speech communication as helping moderately in leading people to her site, more helpful than most other channels. For her and for several other participants, the Web site as a whole sometimes appeared to serve as an intermediate genre leading to the particular genres of samples it contained. In all these cases, participants relied on a genre system that would carry on their marketing pitch through their Web site, or through specific genres within their Web sites, after the conversation ended.

Referrals

Referrals, which previous surveys have found to be a top source of technical communication clientele, would seemingly not need backup support from a Web site to account for their success. For instance, a professional writer who characterized his clientele as "all…repeat and referral" downplayed his site's importance in recruiting clientele:

> Although a referral and my resume/experience [are] worth way more than the value of what's on the site in terms of closing a new client, the site does at least as well as a brochure and portfolio…. Whether small biz or Fortune 500s and 100s, in every case such contracts came about by either by a referral, or in the early years through an agency, and the resume rules. These things usually go: referral (or agency), phone calls, a meeting, a breakfast or lunch, a detailed printed proposal from me if required, some more back-and-forth, and finally a signed contract. Somewhere in there if the client is interested enough they check out my site.

In this elaborate courtship-and-negotiation genre system, the referral and several other genres seem to overshadow this participant's Web site to the extent that it seemed to emerge only tangentially.

By contrast, a technical writer who similarly characterized her clientele as "99% repeat and referral" explained that her site was very useful for her business because it "reinforces [her] credibility as a professional writer, particularly for new referrals." She added: "I know some referrals have checked out my site before contacting me—I could tell by the conversation. They could have gotten the address from their reference, or searched the Web by my name or my company name." She rated referrals as helping a lot in leading people to her site.

Other participants similarly described how their site built their credibility with a referral. For instance, an independent contractor whose site drew in no clients directly but helped moderately as a secondary marketing

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tool explained that "potential clients seem to use the web site to help establish my legitimacy. For example, someone is referred to me, goes to my web site, and then contacts me. People who refer me give my web site address when they do the referral." She too rated such referrals as helping a lot in leading people to her site.

Likewise, a technical writer whose site similarly drew in no clients directly explained how his site was not intended to perform such a primary marketing function but instead to build trust within the more personal networks that characterize business in his region of the country:

> I have never gotten leads or clients because they found my site via searches. I never intended it to work that way partly because I work mostly in the upper mid-west. It is also because most people searching for a tech writer ask other people they know for referrals to a writer. Most new clients come to me through word of mouth. My site allows prospective clients to learn more about me, my skills and to see samples of my work, without having to meet with me first. In a way, the site pre-qualifies me. They can determine if I might be a good fit for their projects.

He too rated his site as helping moderately as a secondary marketing tool. In many of these cases, despite the ethos endowed by the initial referrals, prospects nevertheless followed the genre system to the Web site, apparently seeking to supplement or to confirm officially that initial but insubstantial sense of ethos.

Independents' Own Print Documents

Ratings for participants' public print promotional materials and private print correspondence were frequently tied (126 ties out of 186 pairs of ratings), and so they will be discussed together here. Among the kinds of print genres participants identified as including their Web address were business cards, stationery, letters to clients, brochures, flyers, newsletters, profiles, resumes, cover letters, proposals, training materials, presentation handouts, invoices,

compliment slips, and calendars; also mentioned were nonpaper-based promotional products, such as pens. Apart from the ubiquitous business card, which often worked in tandem with their networking communication, some participants indicated that their use of print was minimal or, when used at all, incidental to their promotional efforts. Indeed, several participants justified their Web site precisely as an alternative to print promotional material such as brochures, which can be expensive to produce, inconvenient to distribute, and quick to become outdated.

However, other participants continued to use print promotional materials, not to bypass their site but to direct prospects to their site. For instance, the president of one company described how the latest edition of her print newsletter sought to attract recipients to her site by responding to a newsworthy event that occurred a month prior to our interview:

> We recently sent out a newsletter mailing to area colleges and universities, as a result of the Virginia Tech shootings. That was actually our first attempt to drive any traffic to the blog. The printed newsletter included our main blog entry on school security, which is a piece I did on lessons learned from Virginia Tech. It asked the reader to go to our web site to view other interesting blogs, including [a colleague's blog entry on enhancing security with well-written policies and procedures].

She went on to explain how she saw such communication as only one part of a larger sequence of communication that would eventually convert some recipients into clients:

> Most sales are not made on first contact, so if we can influence a recipient of a mailing to visit the web site, it would be a treasured second contact, even though the communication is not yet two-way. We will continue contacting these same prospects in an effort to establish a consistent presence that makes them reach out to us. Also, we sometimes

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meet the recipients through professional meetings or mutual acquaintances, and they may remember us or we may recall a name from the mailing list.

Even some independents serving clients in high-tech industries, who might presumably have long since been weaned off such traditional media as print, nevertheless reported that their print promotional materials retained value as a tool to guide industry specialists to their site. For instance, a participant who maintained three distinct Web sites all in support of his software documentation business drew prospective high-tech clients to these sites by using flyers:

> Although the web site is important, I think it's important also to use other forms of marketing. I send flyers to prospects. The ones I send now are designed for people who don't know of the existence of freelance technical communicators…. These flyers are simple—address label goes on one side (no envelope), and a brief message on the other side directs people to the [the main business site and the two informational sites] for more information.

In his survey responses, he rated such public print promotional materials as moderately helpful.

Print Documents of Other Organizations

Print documents of other organizations were not only rated as the least helpful set of Web site promotional channels but also received the highest portion of "not applicable" responses (more than 15%). In an increasingly digital economy, it may be that fewer such documents are in circulation. On the other hand, the survey question suggested as examples business directories, associates' or clients' documents, professional journals, and newsletters, many of which still circulate in print form. The few references interview respondents made to such generic B2C directories as the yellow pages were not encouraging. However, some participants mentioned favorably some community-based business directories, such as those put out by their local chamber of commerce

or those representing businesses owned by a specific demographic group. For instance, one participant described the kinds of community-based print documents that so successfully led people to her site:

> In print, I'm listed in the Finnish American Chamber of Commerce national directory (the listing was free to members but I also paid for an ad). I've also participated in some local business/community events so my URL has appeared printed on fliers, etc.

She was one of only 10 participants to rate other organizations' print documents as helping a lot in leading people to their site.

Another such participant, who rated the print documents of other organizations as the single most successful promotional channel leading people to her site, explained her unusually high rating:

> I've gotten several clients through a local organization that I belong to called Freelance Forum. They encourage members to publish a business profile on their Web site. They publish this information in printed format annually and make it available to businesses that hire freelancers.

For technical communicators with specialized subject-matter knowledge, some authorial acknowledgement can also be earned by publishing in trade journals and newsletters; participants mentioned such publications as well as the accompanying biographical statements and even ads in such venues.

Independents' Own Internet Communication

Among the variety of Internet communication channels, participants most frequently mentioned e-mail and more specifically the e-mail signature block, a subgenre in which contact information is expected. Surprisingly, however, though many of the e-mailed interview responses did not include a signature block at all (understandable, as participants knew that I already had their contact information), 12 of the 74 signature blocks (16%) that were appended to the interview responses did not include a Web address.

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Though e-mail is obviously useful to communicate with current clients, several participants reported using e-mail to maintain a presence with former clients and develop a presence with prospects. For instance, several participants mentioned e-mailing periodic newsletters, which included links back to their Web site. E-mail postings and newsletters of course require that one first get recipients with whom to correspond. Some participants reported sending out prospecting e-mails to local companies, a less intrusive version of the cold call. One participant described how she relied almost entirely on this approach, in tandem with a follow-up phone call, both of which directed prospects to her Web site:

> My ONLY marketing strategy right now (or ever, thus far) is sending "cold e-mails" out to prospective clients. I include a link to my web site in these brief, "Introduction-style" messages (a la "here's what I do, here's how to contact me"). Sometimes, I'll direct them to a specific page (e.g. benefits, etc.). I typically follow-up with a friendly, casual (but always professional) phone call. I use my wonderful personality and sense of humour to make the call memorable and to "sell" more details on my web site.

A similar approach was used by another participant, who described how he was able to confirm that such "cold e-mails" actually led prospects to his site:

> When I reach out to new prospects, through email, I usually include a link to the portfolio section of my web site in the body of the email message…. When I started looking at the web site logs to see who was visiting my site, I saw a noticeable boost in traffic and could see that it was coming from companies that I had emailed. I was surprised by how willing my email recipients were to click on a link in an email from someone unknown to them.

He rated such Internet communication as helping a lot in leading people to his Web site.

Apart from e-mail, some participants mentioned participating in various kinds of Internet forums, such as listservs and discussion boards, and receiving some visibility for their site through their posts, in particular when the topic of discussion permitted them to refer to a related page on their site. As well, some participants mentioned including their Web address in the resumes and profiles they posted to such employment sites as Monster, Dice, HotJobs, and Guru. Similarly, some mentioned including their Web address when bidding on projects posted on such sites as Guru, Elance, and Craigslist, and directing prospects to their Web portfolio. One participant who got much of her work from such sites described how her postings successfully directed prospects to visit her site:

> I put my web site address in all correspondence. I also put a note in there to see my web site for writing samples. 99% of clients look at the samples (and some of the rest of the site) prior to calling me or sending an e-mail to initiate negotiations.

Links from Other Web Sites

Links from other Web sites were rated as significantly less useful than the other two sets of new-media channels and received a relatively high percentage of "not applicable" responses (9%), suggesting that links to small-business sites might not be plentiful or prominent. However, as described above in the methods section, 65 sources, most of which are Web sites with links to independents' business sites, can be credited for contributing to this study's sample, so relevant linking sites are available.

Among the more obvious linking sources are the sites of technical communication organizations with which prospects might be familiar. A few participants favorably singled out their local STC chapter sites, though unfortunately relatively few STC chapter sites feature links to their members' sites. For instance, one participant explained the value of having her profile, along with a link to her site, posted in her STC chapter's "Contractor's Directory":

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While word of mouth provides me with my biggest contracts, the Contractor's Directory provides me with the most leads. In the two years since our Directory began, I have received several phone calls or emails each month from people who have seen me there. All of them click through to my web site before they call me. These prospects offer projects—or ask me to interview for projects—of all sizes…. I do notice that STC directory clients are kind of pre-qualified, so the sales pitch doesn't take as long.

Advanced searches using both Google and Yahoo showed that this STC link appeared to be the only inbound link to her site, yet in her survey responses, she nevertheless rated links from other sites as the only promotional channel that helped a lot in leading people to her site.

Apart from STC chapter sites, participants also mentioned receiving links from sites of other professional and business organizations with whom they have memberships, creating content for other sites with accompanying links back to their own sites, and posting informative content on their own sites that attracted inbound links. (See Killoran, 2010, for a more detailed list of such link sources.) Web content of different genres can be expected to attract inbound links from correspondingly different genres, and correspondingly different surfers. Consider, for instance, the different experiences of two participants, each of whom created content that generated large numbers of inbound links. One created a site that, along with pages devoted to promoting his business, featured several informative pages about one of his specialties, corporate governance, including more than 100 annotated outbound links to related government and business sites worldwide:

The part of my web site that gets BY FAR the most traffic are the pages on Corporate Governance…. This brought a lot of traffic and some good return links (the pages are footnote-reference in several government reports). Which illustrates the point about web sites needing real content.

Using advanced Web searches, I was able to tally 69 inbound links to his site.

The other participant was a very active blogger whose site, according to advanced Web searches, generated thousands of inbound links, mostly from other blogs:

I get links from other blog[s] via Blog Carnivals (blogcarnival.com), which are community-created blog posts linking to various articles on the Internet on a given subject…. I also get links from my large circle of online friends, mostly through the blogging community.

Each participant's distinct Web genres elicited links from correspondingly different genres (e.g., government reports versus other blogs), though, alas, both participants added that such links had yet to generate any business for them. The contrast with the first participant quoted above, whose sole inbound link from her local STC chapter site generated considerable business for her, underscores how hyperlinks support various kinds of genre systems, only some of which would attract the participation of prospective technical communication clients.

Search Engines

In other articles, I have examined how and to what extent independents orient their Web sites to search engines, and in turn search engines' importance as a source of that portion of their clientele who originate primarily because of their Web sites (Killoran, 2009, 2010). In this article, I single out a few practices that illustrate genre systems leading from search engines to independents' sites.

Some participants were able to track the Web-based genre systems leading to their site using Web analytic tools, such as Google Analytics (www.google.com/analytics/). For instance, by monitoring the referring URLs that led to his site, a participant whose five-year site meter tally showed over 10,000 hits was able to estimate that only about a quarter of his site traffic was actually related to his business. The rest, he described,

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were from such incidental searches as a musician or an actor who happen to share his name:

> Unfortunately, it appears that people are not finding my web site as a result of searches for writer, technical writer, tech writer or other related terms. I'm not sure whether this is because I haven't done my SEO [search engine optimization] homework properly or that people just aren't searching for those terms enough for me to bubble to the upper reaches of the search results for them.

He rated search engines as helping only a little in leading people to his site.

Similarly, another participant described how, by monitoring and analyzing traffic for individual files, he was able to account for their popularity and unpopularity:

> Monitoring hits is highly valuable. It helps to see what visitors are doing and what pages are popular. [One set of related pages] mostly draw people looking for images and clipart. Even "junk" hits help with the search-engine rankings. One of the most popular pages on the web site is the links page, not because people like the links, but because they like the "cool sun" clipart. Experimenting with content is also valuable, for me at least. For a few weeks I had a page that explained why companies should hire a real tech writer and not a desktop publisher masquerading as a tech writer. Apparently, I offended people. Every single person who landed on that page left the web site immediately. On the other hand, maybe they were all looking for desktop publishers….

He rated search engines, along with links from other sites, as helping moderately in leading people to his site, the only two channels that helped at all. As is evident from these participants' comments, search engines are not particularly discriminating judges of genre systems; they can generate many site visits, but

many are those of surfers who are not pursuing genres related to technical communication services.

To gain more visibility for their sites, several participants mentioned advertising on search engines, singling out Yahoo Search Marketing and especially Google AdWords. In a process known as paid placement, businesses bid on specific search queries, such as "technical writer," for which their ads appear along the margins of search engine results pages. One participant appeared to rely almost exclusively on paid placement, explaining that traffic generated through Google accounted for 95% of his clients: "I subscribe to Google Adwords and bid to be listed about 5th in the 'sponsored links' column for certain keyword searches. It costs me about 50$ a month on average. That's all I do." Compared with the time he devoted to "fiddling with [his] Google Adword bids," he reported investing little time attempting to raise his site's "organic" (natural) search engine rankings, having maintained the same site design for a decade and updated its content only once or twice a year. He nevertheless rated search engines as helping a lot in leading people to his site; he rated most other channels as not applicable.

His singular marketing strategy was usual, however, as most participants who mentioned paid placement seemed to use it as just one promotional channel among others, and some used it only intermittently, such as when business was low. One participant who used paid placement extensively, having run about 30 different Google Adword ads, maintained her business by relying primarily on such Web-based marketing channels. In her survey responses, this participant, whose company offered a wide variety of marketing communication and technical communication services, rated Web searches as well as links from other sites as helping a lot in leading people to her site, a rating much higher than those for the other channels. She described the traffic that such channels directed to her site:

> [My company's] Web site attracts 3,000 people a day through organic links, search engines, and pay per click. Of those people, approximately 5% spend more [than] 10 minutes on the site. Every week, an average of five new businesses contact us for help on projects of the size and

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scope we desire…. Web marketing is our primary means of attracting qualified new customers and in fact we undertake similar web marketing projects for other companies as part of our scope of service.

Despite her company's evident success using paid placement and organic search marketing, her site's success rate with such Web-marketing channels—roughly one new prospect per day out of 3,000 site visits per day—underscores the unreliable but prolific nature of search engine genre systems: Search engines are undiscriminating, though by directing huge numbers of surfers, they can be among a Web site's most useful channels.

Implications for Technical Communications

This study has demonstrated that independents' business Web sites, aside from recruiting a modest portion of clientele directly, are also helpful in recruiting clientele who originate through such traditional means as referrals and networking. Higher levels of such Web site efficacy are associated with higher levels of efficacy among communication channels that lead people to these sites, which suggests a possible causal connection in which the communication channels contribute to the Web sites' efficacy. More generally, Web genres, such as business Web sites, may become effective not just on their own merits but also by being integrated into effective genre systems.

Among the variety of communication channels that could lead people to independents' business Web sites, this study found that two sets were significantly more helpful than all others: those involving search engines and a business's own Internet communication. Both of these, like the business Web sites themselves, are kinds of new media. By contrast, none of the less-helpful sets of channels, apart from links from other Web sites, are kinds of new media. Such a pattern raises the possibility that medium may be a factor in the integrity and efficacy of genre systems. The convenience of a

shared medium might facilitate communication from one genre to the next, such as when an e-mail posting includes a hyperlinked Web address enabling ready access to the Web site with just a click. Correspondingly, the inconvenience of traversing different media might impede communication from one genre to the next, such as when a Web site can be accessed only after typing its long and unmemorable address. This media factor could thereby contribute to the systemic character of genre systems, reinforcing and thereby perpetuating genre systems that can operate efficiently but undermining and potentially diminishing genre systems that cannot. For instance, such a factor could have contributed to the relatively modest impact shown here by referrals and networking, which have traditionally been independents' top marketing methods but were not rated as comparably helpful in leading people to independents' marketing Web sites. Genres used when making referrals and networking might be impeded from developing systemic connections with new media genres as strong as those of genres sharing the same new-media foundation.

For independent technical communicators seeking to improve the efficacy of their own Web site or the Web sites of their clients—and by extension for technical communication employees responsible for their employer's Web site—the results of this study can offer some practical guidance. The typical participant seemed invested heavily in some marketing methods and communication channels but lightly or not at all in others, and the particular repertoire of favored methods and channels varied somewhat from participant to participant. These extremes of investment and underinvestment may reflect not just the strengths or weaknesses of the methods and channels themselves but also participants' own communication circumstances and preferences. Such an observation echoes results from earlier surveys of independents (STC, 2000, 2002, 2004; STC Consulting and Independent Contracting SIG 2005a, 2005b), in which respondents presented with a large assortment of marketing practices typically selected or highly rated only a few. Collectively, results from all these studies suggest that many independents have been pursuing a limited repertoire of marketing practices while neglecting or not fully engaging in other marketing practices that work well for their peers.

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The interview responses described above illustrate how each set of channels, even the low-rated print documents of other organizations, had considerable successes in directing traffic to the Web sites of some participants. As well, the survey responses indicate that even brochure-like Web sites, typically overshadowed by more active marketing methods, had considerable successes as primary or secondary marketing tools in recruiting clientele for some participants. Independent technical communicators could draw on these experiences of their peers to expand their own marketing repertoire.

More generally, many technical communicators are no doubt familiar with the feeling that their work could benefit from better marketing, marketing not just in the narrow sense explored in this study but also in the broader sense of justifying their work and their professional contributions. This study, through both its genre systems theoretical framework and its empirical results, underscores how a genre's success might rely on the success of its genre systems. When defending the efficacy of their work, such as its impact on audiences, technical communicators could expand the issue from the narrow focus on their work itself to advocate for their clients' or employers' greater commitment to the genre systems that bring audiences to their work. Such a shift to a more intertextual and systemic vision of technical communication work could better market technical communication, in both the narrow and broader senses.

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APPENDIX: Survey Instrument

Below is an excerpt of the survey instrument used for participants based outside the United States. It includes minor changes from the instrument first used for U.S.-based participants.

Questionnaire about the Business Web Sites of Technical Communication Companies, Consultants, and Independent Contractors

Clientele

1 What percentage of your technical communication clientele has originated primarily because of your business Web site?

- ☐ 0%
- ☐ 1 – 4%
- ☐ 5 – 9%
- ☐ 10 – 19%
- ☐ 20 – 49%
- ☐ 50 – 100%
- ☐ Don't know

2 For technical communication clientele who have not originated primarily because of your Web site (but primarily because of referrals, reputation, networking, etc.), how much has your Web site helped you get such clientele?

- ☐ 0. Not at all
- ☐ 1. A little
- ☐ 2. Moderately
- ☐ 3. A lot
- ☐ Don't know

Web Site Promotion

3 How much have the following promotional methods helped in leading people to your business Web site? (For methods not used, answer "N/A")

	Not at all 0	A little 1	Moderately 2	A lot 3	Don't know ?	N/A
WEB: Search engines						
WEB: Links from other Web sites, not including search engines						
INTERNET: Web address included with your Internet-based communication (examples: e-mail and attachments, listserv postings, submissions to job boards)						
PRINT: Web address imprinted on your public promotional materials (examples: business card, brochure, advertisements)						
PRINT: Web address included in your private print correspondence (examples: prospecting letters, resume)						
PRINT: Web address in print documents of other organizations (examples: business directories, associates' or clients' documents, professional journals, newsletters)						
SPEECH: Web site mentioned in your speech communication (examples: phone and face-to-face networking, professional presentations)						
REFERRALS: Web site mentioned by people outside your business						

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Writing for Robots: Search Engine Optimization of Technical Communication Business Web Sites

John B. Killoran

Abstract

Purpose: This article explores how businesses offering technical communication services used search engine optimization techniques to attract prospective clients to their business Web sites.

Method: The study draws on a survey of 240 principals of these businesses, brief interviews with half of them, analyses of their sites, and tallies of inbound links to their sites.

Results: The interviews and analyses reveal how businesses oriented their sites not only to a human audience of prospective clients but also to an audience of search engines. Businesses that reported search engines to be more helpful in directing traffic to their sites had sites that, in comparison with those of their less successful peers, featured longer home page titles and received more inbound links.

Conclusion: Though search engine optimization techniques can increase Web site traffic, technical communication businesses varied widely in how extensively and expertly they used such techniques.

Keywords: technical communication businesses, Web sites, search engine optimization, hyperlinks, titles

Practitioner's Takeaway

- Technical communicators reveal how they constructed and updated their Web sites to attract both human and search engine audiences.
- Human and search engine audiences can invite different Web site communication techniques.

- Techniques associated with higher levels of search engine traffic include writing longer Web page titles and generating higher numbers of inbound links.

Introduction

The top three pieces of technical communication that most people encounter are arguably the search interfaces of Google, Yahoo, and MSN (recently rebranded as Bing). These three rank among the top ten most heavily visited Web sites (Hitwise, 2009). Together with other

search engines, they are used by 41% of American adult Internet users on a typical day (Madden, Fox, Smith, & Vitak, 2007). Some fraction of these users are no doubt searching for the work of technical communicators, much of which nowadays gets posted somewhere on the Web. But amidst the Web's trillion-plus unique Web addresses (Official Google Blog, 2008), the work of technical communicators is not always easily found. Hence, search

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engines play a key role in the technical communication information ecology, and for this reason, it is important that technical communicators create Web documents in such a way that users of search engines can easily find them.

This article examines how technical communicators orient their work to search engines. Technical communicators are, of course, accustomed to orienting their work to various human audiences, and like any human audience, search engines may be more effectively communicated with in some ways and not others. The practice of orienting a site to search engines is called *search engine optimization* (SEO), and as search engines have become increasingly sophisticated, so too have webmasters, to the extent that in 2003, the practice spawned its own professional organization, the Search Engine Marketing Professional Organization (SEMPO), at www.sempo.org.

This article first introduces SEO, focusing in particular on writing-based techniques that get Web pages ranked higher. Then it explores how technical communicators practice such techniques by examining the experiences and Web work of those who have an interest in having their Web sites found: technical communicators who maintain a Web site for their own independent company, consultancy, or freelance work. I surveyed 240 principals of these businesses, briefly interviewed half of them by e-mail, analyzed their sites, and tallied links to their sites. I describe how they oriented their sites to either, or both, a human audience and search engine audience. Then, I analyze their use of two particularly important SEO techniques, contrasting how these two are used in sites that are more successful and less successful at attracting search engine traffic. The article concludes by discussing why and how SEO know-how should become part of the repertoire of all technical communicators, whether independents or employees, whose work gets posted on the Web.

Search Engine Optimization and Business Web Sites

SEO has been defined as "[t]he practice of using a range of techniques, including augmenting HTML code, web page copy editing, site navigation, linking

campaigns and more, in order to improve how well a site or page gets listed in search engines for particular search topics" (Search Engine Marketing Professional Organization [SEMPO], 2008, p. 3). For instance, in recent years, the *New York Times* and other media outlets have been composing headlines for their Web articles that are typically less allusive and more literal than the headlines for their corresponding print articles (Lohr, 2006). Such changes, along with other SEO techniques, have been credited with significantly increasing the numbers of Web site visitors arriving through search engines (Sherman, 2006). *SEO* is sometimes used synonymously with *SEM*, search engine marketing, but strictly speaking, SEM encompasses SEO plus other Web marketing techniques, including advertising through search engines, that are not explored in this article.

Though SEO can benefit any Web site, it could be particularly advantageous for the sites of independent professionals and small businesses, which typically cannot marshal the resources to match the extensive marketing campaigns of their larger organizational competitors. But by using communication techniques that are accessible to all, such as a change in writing style, small businesses can reach their target audience right at the moment when that audience is searching for them. A commercially sponsored survey found that 82% of U.S. consumers claimed that search engines were among the tools they use to find local businesses, and that 50% would turn to search engines first (WebVisible and Nielsen Online, 2009, pp. 2–3). This same study found that, among U.S. small businesses, 26% have invested in some kind of SEM (p. 6), and that search engines were among small businesses' fastest growing marketing tools, roughly tied with or leading the growth in other Internet marketing tools and offsetting the decline in the use of all "old media" marketing tools (p. 8).

In a 2005 survey of members of the STC Consulting and Independent Contracting SIG, only 22% of respondents to a question about marketing methods responded that publishing a Web site was not applicable to them, suggesting that the other 78% had indeed gone through the effort and expense of creating and maintaining a business site (STC Consulting and Independent Contracting SIG, 2005b, p. 10). These

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78% rated their Web site as among their more useful marketing tools. To achieve such success, it was no doubt necessary that prospective clients first find their site.

This article builds on a previously published analysis of the role of small businesses' Web sites in the marketing of technical communication services and on the role of search engines in particular. That article (Killoran, 2009) reported that only a portion of businesses' technical communication clientele originated primarily because of their Web sites, but that portion was not inconsequential: Almost half the businesses drew in at least 10% of their clientele primarily through their sites, including a quarter of businesses that drew in 20% or more of their clientele this way. Among various channels that would direct people to their Web sites, these businesses rated search engines to be among the most useful. Analysis also revealed an association between higher levels of such search engine usefulness and higher percentages of technical communication clientele originating primarily through these sites; hence, pursuing search engine rankings might be financially remunerative. Analysis of their sites revealed evidence showing that most technical communication businesses had considered search engines to be at least nominally among their Web site's audiences. Building on that foundation, this article examines these businesses' techniques for earning high rankings from that audience.

Search Engine Optimization Techniques

Optimizing a site for search engines does not necessarily mean de-optimizing it for humans. Many of the techniques that are effective with one audience are also effective with the other, especially as search engines' ranking algorithms have increasingly factored in data generated from human behavior. However, just as various human audiences do not read a site the same way, human and search engine audiences do not read a site the same way. In general, search engines are the idiot savants of readers: Whereas humans skim and read between the lines, search engines read Web text and Web code meticulously and literally. Search engines are much stronger at analysis but much weaker at synthesis, more preoccupied than typical human readers with various quantifiable and structural features of a Web page, but

woefully ill equipped to construe the rhetorical purpose of that page and its surrounding Web site.

Though search engine companies guard their ranking algorithms' confidentiality (Hansell, 2007), some companies have revealed some of the more obvious variables in their algorithms, and other variables are known or suspected among researchers, SEO specialists, and webmasters who continuously monitor and analyze their own sites' traffic. For instance, Google's patented PageRank™ algorithm, which works like an academic citation index of a Web page's visibility, ranks a page according to the number of other pages that link to it and the PageRank of those linking pages themselves (Brin & Page, 1998). When Google was originally developed in the late 1990s, other variables in its ranking algorithm included the position, font, and typographic case of terms on a Web page; their proximity on the page with other terms used in a search query; and the terms used in the anchor text of hyperlinks that link to that page (Brin & Page, 1998). A decade later, Google's ranking algorithm now includes more than 200 variables (Google, 2009b, 2009c). Google itself reveals some of these variables, such as in advising webmasters to use accurate and informative title tags (see Figure 1) and HTML "alt" attributes to describe images (Google, 2009e), which search engines cannot otherwise "see." Other text features generally understood to receive significant weight in ranking algorithms include text

```
<html>
<head>
<meta name="description" content="A
description of the webpage is entered
here.">
<meta name="keywords"
content="Keywords are listed here.">
<title>The page title entered here is
displayed on search engine results
pages, browser tabs, the top of
browser windows, and in bookmarks
lists.</title>
</head>
```

Figure 1: Opening HTML code of a generic Web page showing meta tag description, meta tag keywords, and the title tag

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placed in HTML header tags (Ledford, 2008, p. 106), in emphasis tags (pp. 108, 167, 171), and at the tops of Web pages (p. 341). Sensibly repeating keywords to raise a Web page's keyword density (i.e., the number of keywords divided by the total number of words on a page) has been found to influence rankings (Zhang & Dimitroff, 2005a), apparently Yahoo rankings in particular (Ledford, 2008, pp. 284–285).

Some variables look beyond the state of a Web page at any given moment to consider its state over time, such as how long established a page's Web domain is—older is better—and how frequently the page has changed over time. Change implies that the page has not been abandoned, and is favored by search engines like Google and especially MSN (Ledford, 2008, pp. 48, 284, 322). Indeed, the growing popularity of corporate blogs can be partly credited to the favor that search engine algorithms accord to Web pages that receive frequent updates (Ledford, 2008, pp. 48, 339). Some variables also factor in a Web page's environment: the rest of its site and the rest of the Web. One study of successful SEO specialists found that they employed not only internal but also external techniques (i.e., not only within but also beyond a page) to boost rankings, such as creating high numbers of site pages and generating high numbers of inbound links from other sites (Evans, 2007).

Yet a full understanding of search engines' ranking algorithms remains elusive. In one study, researchers attempted to reverse-engineer Google's algorithm using twenty-two variables but were largely unsuccessful (Bifet, Castillo, Chirita, & Weber, 2005). In addition, search engines' algorithms are constantly evolving, with Google, for instance, adjusting its algorithm an estimated half-dozen times per week (Hansell, 2007). Some changes are implemented in response to the manipulative actions of SEO practitioners themselves. For instance, once Web marketers recognized the importance of inbound links, they began posting "link farms," Web pages that served no purpose other than to furnish other sites with inbound links. Search engines like Google then responded in turn by treating with suspicion pages filled with nothing but links, and factored into its assessment of a link the mutual relevance of the content of the two linked pages (Ledford, 2008, pp. 20, 26, 38).

For similar reasons, not included among Google's 200-plus ranking variables are two of the more commonly used meta tags: meta tag descriptions and meta tag keywords (Google, 2009a). Ironically, such meta tags were invented precisely as a means by which Web information could be readily identified by machines like search engines. However, as they are embedded within the head section of a Web page's HTML code (see Figure 1), they never had the visibility to human audiences that might otherwise have kept them honest. One study found that the presence of a meta tag description indeed raises a page's search engine ranking (Zhang & Dimitroff, 2005b), but in general the relevance of such meta tag descriptions to search engines has been diminishing (Moran & Hunt, 2006). Though they are not among Google's ranking variables, they can nevertheless be important to a human audience on the rare occasions when Google excerpts a meta tag description to annotate a link on a SERP, a search engine results page (Official Google Webmaster Central Blog, 2007b). Yahoo, by contrast, is much more likely to use them on its SERPs (Moran & Hunt, 2006). In contrast with such a fitting use of meta tag descriptions, meta tag keywords (not to be confused with keywords that would likely appear amid a Web page's text) are never ordinarily visible to human audiences at all and so are trusted even less (Moran & Hunt, 2006; Sullivan, 2002a, 2002b).

As this brief review makes evident, SEO, much like the practice of technical communication in general, at best proceeds by a combination of knowledge and educated guesswork into the "mind-set" of its search engine audience. In such circumstances, it is not clear how technical communication businesses, which have expertise writing for human audiences but not necessarily for search engines, would employ SEO techniques to promote their Web sites, a situation that prompts two general research questions:

- RQ1: How do technical communication businesses orient their sites to audiences that include not only humans but also search engines?
- RQ2: How do technical communication businesses that are more successful attracting search engine traffic compare with those that are less successful in how they employ SEO techniques?

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With more than 200 search-sensitive variables that could be described and compared, it is not feasible to describe technical communication businesses' use of all SEO techniques, let alone attempt a comprehensive comparison between more successful and less successful business sites. Hence, to address these general research questions, the second question in particular, this study focuses on two SEO techniques that are prominent to both human and search engine audiences, are at least partially quantifiable, and are comparable across various sites: one an internal Web site factor, title tags; and the other an external factor, inbound links. This selection of both an internal and an external factor provides a manageable and balanced representation of the scope of SEO techniques.

Title Tags

Title tags are among the most important fragments of text on a Web page for both search engine and human audiences:

- They are the only tag from a Web page's meta section factored into Google's ranking algorithm (Dawson & Hamilton, 2006) and apparently are particularly important for Yahoo (Ledford, 2008, p. 284).
- They are displayed prominently in large, blue hyperlinked headings on SERPs, where searchers tend to rely on them more than on the accompanying annotations or link addresses (Jansen & Molina, 2006).
- They are displayed to surfers on the tabs of browser windows, at the top of browser windows, and in a bookmarks list when a page is bookmarked, and so are among a Web page's most salient signposts.

In a survey of advertisers experienced in SEM, the use of keywords in title tags ranked among the top SEO techniques (SEMPO, 2008, p. 69). The mere presence of a title tag is associated with higher rankings in SERPs (Zhang & Dimitroff, 2005b), and a greater repetition of keywords in a title has been found to raise that page's ranking in a SERP (Zhang & Dimitroff, 2005a), suggesting that perhaps longer titles might have a greater effect than shorter titles simply because longer titles can hold more keywords.

However, on their SERPs, Google, Yahoo, MSN, and other search engines truncate titles that exceed 64 characters or so, including spaces. Also, repetition of keywords, known as "keyword stuffing," is frowned upon by search engines like Google and can result in a Web page's lower ranking or even removal from the search engine's index (Google, 2009d; Ledford, 2008, pp. 10, 47, 90). According to Ledford (2008), some search engines index only the first 50 characters in a title, leading her to recommend short titles, preferably fewer than 40 characters (pp. 46–47). Though other search engines will still index and factor into their ranking algorithm the truncated portion of a long title, the weight a ranking algorithm grants to a title might be distributed among the title's various words (Moran & Hunt, 2006; Sweeney, 2008); a word buried in a longer title could thereby have less impact than the same word in a shorter title. Malaga (2007) observed that titles of successful sites were short and focused on key search terms. The home pages of Google and Yahoo themselves currently feature one-word titles; however, subordinate pages of both search portals feature longer titles, sometimes exceeding 64 characters, and some successful ecommerce sites, such as Amazon and eBay, currently feature home page titles that exceed 64 characters. Site authors would also have to consider how a long title would appear to their human audiences. Apart from appearing truncated in SERPs, long titles appear even more truncated in bookmarks menus and in the tabs of browser windows.

Ultimately, if titles are to assist their sites in being found and well ranked by search engines, they must include keywords that match users' search queries. A pair of commercially sponsored surveys of U.S. consumers found that, when searching for a local business, at least half said they compose a search query that describes the kind of service they seek, but a bit less than half also include a geographical term, such as the name of their city, in such a search query. Only a small portion search by a specific business name, perhaps because it is their lack of previous familiarity with a specific business that is prompting their search in the first place (WebVisible and Nielsen//NetRatings, 2006, p. 4; WebVisible and Nielsen Online, 2009, p. 7). Indeed, Ledford (2008) advised not to include a business name in a title unless the business is already

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so well known that the name would appear in search queries; instead, she recommended using keywords that match the content of the page (p. 46). Hence, apart from a title's length, authors of small-business Web sites would have to consider a title's potentially keyword-rich references to the business services offered, the business's geographical location, and the name of the business or its principal.

This record of SEO research and professional practice, along with the need to serve both human and search engine audiences, raises a set of research subquestions specifically about the title tags of technical communication business sites:

- RQ1a: How long are the title tags of technical communication business sites?
- RQ1b: What keywords and other content appear in the title tags of technical communication business sites?
- RQ2a: How does the length of title tags compare between technical communication business sites that are more successful attracting search engine traffic and those that are less successful?
- RQ2b: How does the occurrence of keywords in title tags compare between technical communication business sites that are more successful attracting search engine traffic and those that are less successful?

Inbound Links

The other quantifiable variable to be compared is inbound links. Inbound links are a key means by which both human surfers and search engines find Web sites. As discussed above, Google's PageRank formula relies primarily on such links—the correlation between the two measures has been confirmed by outside researchers (Fortunato, Boguna, Flammini, & Menczer, 2006)—and Google openly advises webmasters to get other relevant sites to link to theirs (Google, 2009e). One study found that sites with more inbound links were more likely to be covered by search engines (Vaughan & Zhang, 2007). A study of SEO specialists found that one technique they employed was to generate high numbers of inbound links (Evans, 2007), and in a survey of advertisers experienced in SEM, inbound links ranked among the best SEO

techniques (SEMPO, 2008, p. 69). One of the hottest new areas of SEO, social media optimization, focuses on generating inbound links from Web 2.0 social media (Bhargava, 2006; Ledford, 2008). Yet generating inbound links can be a challenge for small businesses in particular because few other webmasters or Web writers would know about them, and even when known, their brochure-type sites would typically offer few enticements deserving a link. This challenge, along with the need to generate links that would be relevant to both human and search engine audiences, raises a set of research subquestions specifically about inbound links to technical communication business sites:

- RQ1c: How do technical communication businesses generate inbound links to their sites?
- RQ1d: How many inbound links do technical communication businesses generate to their sites?
- RQ2c: How do the numbers of inbound links compare between technical communication business sites that are more successful attracting search engine traffic and those that are less successful?

Thus, analyzing differences in these two key SEO factors—title tags and inbound links—can offer a snapshot both of how technical communication businesses orient their sites to mixed audiences of humans and search engines and of how those businesses whose sites attract more human visits through search engines apply SEO techniques differently than those whose sites attract fewer such visits. The research studies cited above employed a diverse range of research methods: various human subjects research methods to inquire into the practices of Web site authors and their audiences; and analyses of Web code and Web text to inquire into the practices of Web site authors and search engines. Accordingly, as this study sought to inquire into the SEO practices of technical communication businesses and the efficacy with which those practices attracted search engine traffic, it employed a comparable range of research methods. To assess quantitatively the efficacy of technical communication business Web sites with both human and search engine audiences, I surveyed principals of technical communication businesses with Web sites. Then, to gain greater insight into technical communicators' orientations toward

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their human and especially search engine audiences, I briefly interviewed willing survey respondents by e-mail. Finally, to assess objectively the features of these businesses Web sites' title tags and inbound links, the Web sites of all survey respondents were downloaded and analyzed and their inbound links were tallied using search engines. In the following sections, I describe the sampling and recruitment procedures, survey and interview procedures, Web site analysis, and routine for tallying inbound links.

Research Methods

Sampling and Recruitment Procedures

Sampling of technical communication business Web sites was conducted throughout the winter and spring of 2007, well before STC's *Online Buyers Guide and Consultant Directory* (2009) was published. Hence, I relied extensively on search engines, in particular Google, Yahoo, and MSN, which collectively were conducting over 85% of all U.S. searches at that time (Burns, 2007a, 2007b). I approached the sampling process as a typical prospective client might when seeking services of the kind that would prompt a search query like "technical communicator" as distinct from queries like, say, "copywriter" or "Web designer." I used a variety of search queries that are roughly synonymous with "technical communication business": "technical writer," "technical writing consultant*," "technical communication consultant*," "technical writing service*," and "technical documentation services" (search engines typically treat an asterisk as a wildcard character). I also followed the sponsored links returned by such searches, though these furnished only a small fraction of my sample. These searches were not restricted geographically, but for practical reasons only sites that were at least partly in English were considered.

Though a patient exploration of the millions of pages reportedly turned up by any one such search might, in principle, eventually unearth most technical communication business Web sites, SERPs list only the first thousand pages, and so I examined SERPs for each search until that limit was reached or until I ran into a clear pattern of unproductive listings, typically a sequence of 50 links without a technical communication

business site among them. To appreciate the challenge small businesses face in being found on the Web, it is important to recognize that even such a listing of a thousand will typically be only thinly populated by technical communication business sites. Searches for "technical writer," for instance, tend to turn up informational sites, educational programs, job ads, technical writing staff in various industries, staffing companies, and the 2003 movie *The Technical Writer*, often before they turn up technical writing businesses. As typically small, static brochure sites reaching out to a relatively specialized audience of prospective clientele, technical communication business sites are liable to be ranked low by search engines like Google that favor large, popular, frequently updated sites. Moreover, because technical communication services have traditionally been marketed primarily through referrals and networking (STC, 2004; STC Consulting and Independent Contracting SIG, 2005a, 2005b), it is likely that some technical communication businesses do not take full advantage of SEO techniques to make their sites easier to find.

Accordingly, I also sought out other sources to discover sites that might be missed or poorly ranked by search engines: general Web directories, links posted on dozens of Web sites related to technical communication or to business services, and business Web addresses included in a few listserv and print sources discussing technical communication business (see Killoran, 2010, for a more detailed list). Collectively, these furnished about half my sample, though the two halves overlapped considerably. Sampling continued until a majority of the sites found with each new search or source tended to duplicate those already found.

All prospective sites were examined to determine whether they were indeed technical communication business sites. I operationally defined such a site to be an independent Web site representing a company, consultant, or independent contractor that is significantly oriented to offering such services as writing, editing, or designing technical documents. Whereas many such businesses were quite specialized, a number of businesses that offered technical communication services also offered services perhaps better described as marcom (marketing communication), Web design (of nontechnical Web sites), copywriting, translation,

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and a seemingly endless range of other services. As long as they showed evidence of offering technical communication (as operationally defined) among their primary services, these were included within the sample. Just over a thousand sites met these criteria. To increase the likelihood that the study focused on sites representing still-viable businesses, sites that did not show evidence of activity within the preceding year or so were removed from the sample. (See Killoran, 2009, for a detailed description of this culling process.) This left 638 reasonably current business sites offering technical communication services.

These businesses—in particular their principals when a principal's name or e-mail address was known—were e-mailed with an invitation to complete a brief survey questionnaire, and nonrespondents were e-mailed again two more times over the subsequent few weeks. I received 240 usable questionnaires, plus an additional 6 that were not usable because they listed a Web domain that could not be matched with the sites listed in the sample pool, as well as returned (undeliverable) e-mails from 17 sites. Thus, the overall response rate was 39.6%. Considering the general decline in survey response rates (e.g., Eaton, Brewer, Portewig, & Davidson, 2008, pp. 115–116), this can be considered a decent rate, especially when compared with the response rates of other surveys of small businesses about their Web sites (Flanagin, 2000; Pflughoeft, Ramamurthy, Soofi, Yasai-Ardekani, & Zahedi, 2003) and of technical communication consultants and independent contractors (STC, 2004; STC Consulting and Independent Contracting SIG, 2005a). For the sake of conciseness, I refer to all participants as running *businesses*, though some were no doubt unincorporated, because 87% of their sites feature their business names.

Survey, Interviews, Web Site Analysis, and Tally of Inbound Links

Survey Though this article does not explore the survey results, passing mention is made of the results of a couple of survey questions. The first asked participants what percentage of their technical communication clientele had originated primarily through their Web site. The other question, a multipart question, asked participants how much search engines,

as well as various other kinds of communication such as links from other Web sites, helped in leading people to their business Web site. Response options for this multipart question ranged from 0 (helped "not at all") to 3 (helped "a lot"), with additional response options indicating "don't know" and "not applicable." For more details about these survey questions and their results, see Killoran (2009, 2010).

Interviews Two concluding survey questions played an instrumental role in leading to the interviews and Web site analysis, which are the methods that produced most of the results reported below. One asked participants whether they would be willing to participate in a brief e-mail interview; 126 of the survey respondents went on to submit interview responses. As it was clear from some participants' survey responses or Web sites that SEO was not an important part of their marketing strategy, interview questions relating to SEO were asked only when it was apparent that such questions could elicit informed responses. It was also readily apparent that, for some, SEO was a sensitive topic, and so I asked probing questions only cautiously. Indeed, the only two participants who explicitly withdrew from an interview because of the nature of the interview questions each cited a question about SEO as their main reason: They did not want to reveal their "trade secrets" or "bag of tricks."

Web site analysis The other survey question playing an instrumental role here asked participants for the URL of their business Web site so that their participation could be matched with the list of URLs in the sample pool and thereby authenticated, and so that their sites could be downloaded and analyzed together with their survey and interview responses. One participant's site remained inaccessible despite repeated attempts, and so could not be included among the remaining 239 sites that were analyzed.

Within the HTML files themselves, the main analyzed feature pertinent here was the home page's HTML title. Though, on many sites, each site page often had its own distinct title, the home page was selected as the source for such analysis for a few reasons:
- Among the sample's very diverse sites, every site had a distinct home page.

- As the home page is the typical URL featured in links and in business promotional material, the home page is the typical entry point for both human visitors and search engines.
- A home page title, in contrast with titles of subordinate pages, seems most likely to best represent the business as a whole.

Titles were analyzed both quantitatively and qualitatively for a number of factors:

- Their length in words and also characters
- The type of content they included, such as the name of the business or principal, a reference to the business's services, and a reference to the business's geographical location
- Tallies of the most common terms appearing across the entire sample's titles

Tally of inbound links Finally, to obtain an objective measure of this study's external SEO factor, inbound links, I conducted both Google and Yahoo searches using the search query "link:http://www. DomainName.com" (substituting in each site's domain name) to tally the inbound links to each site's domain or, in the few cases when that domain was unrelated to technical communication, to the site's main technical communication home page. These searches were also conducted on the Web domain of the inaccessible site mentioned above. As some businesses maintained their Web domain both with and without the "www" prefix, searches were conducted on both options and the higher tallies were recorded.

Results

To develop a broad understanding of businesses' SEO orientation and techniques, I first draw on participants' interview responses to illustrate how participants oriented their sites to either, or both, a human audience and a search engine audience, the general objective of RQ1. Then, to address the various subquestions of both RQ1 and RQ2, I analyze businesses' use of title tags and inbound links, first describing their characteristics and then comparing those of sites that are more successful attracting search engine traffic with those that are less

successful. Finally, to interpret these results for what they say about technical communication businesses' Web marketing practices, I briefly discuss participants' disparate attitudes toward SEO.

Business Web Sites' Orientation to Human and Search Engine Audiences

As the intended audiences of these business Web sites are obviously human, participants' descriptions of how they oriented their sites to search engines can be revealing for how they approached the two potentially conflicting audiences, the crux of RQ1. Participants describing their practices toward search engines often referred to their site's human audiences as well. Consider, for instance, the perspective of a participant whose site ranks first in a Google search for her particular technical communication service specialty. She described how her site's search engine success emerged in part as a side effect of her goals toward her target audience of prospective clients but also from some awareness of SEO:

> [My site] was originally set up (around 1998) as an advertisement for my writing/ editing/publishing services, with the intention of positioning myself as *the* authoritative web site on [my specialty], and thus attracting paying clients—which it did. [A]t the time there were few other sites providing this type of information; now there are many…. [M]y web site was the first site to focus on [this specialty]. It's a big site, with lots of relevant content. It has incoming links from many, many related web sites, and many of those links have been in place for years. Most of the pages have good metadata, and are generally structured for search engine optimization. And, of course, the site's name contains the phrase [naming the job title of one who performs this service].

As is evident in her explanation, some of these features accounting for her search engine success would have had to be important for human audiences first, such as her site's ample content, which would invite other webmasters to link their sites to hers,

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which in turn would then raise her site's search engine rankings. Other features, such as her site's longevity, might be equally important for human and search engine audiences; it has enabled hers to build up its reputation among her human followers, and a domain's longevity is also important to search engines like Google. Yet other features would be more relevant to search engines, such as the good metadata, which is not ordinarily viewable by human audiences. It is clear that this participant was conscious of her site's impact on both kinds of audiences.

Some participants, when asked about their SEO techniques, mentioned features that would be accessible to both human and search engine audiences but referred to their sites with a level of granularity that revealed they could see their Web text as a search engine would—not so much as whole passages but as collections of keywords. They mentioned such techniques as placing keywords where search engines would most notice them: high in a page or tagged as headings, hyperlinks, or other HTML formats. For instance, a participant who rated search engines as very helpful in leading people to his site, and who estimated that at least 20% of his clientele originated primarily through the site, described his successful SEO practices: "Although I write primarily for my readers and not SE bots [search engine robots, also known as Web crawlers or spiders], knowing how to place keywords in proper syntax (headings, bold, italics) and in links makes more attractive spider food." Despite his explicitly favoring human readers over search engines, this participant's "spider food" comment illustrates an analytical view of Web site text that would likely escape most of his readers. Also, in pointing out that he oriented his site primarily to human readers and not search engine robots, this participant alluded to the potential tension in orienting simultaneously to the two audiences, each of which can invite different techniques.

Such different techniques were evident in other participants' comments and in many Web sites themselves. For instance, like the participant quoted above with the top Google-ranked site, some participants mentioned their site's metadata, which human audiences cannot ordinarily read but which search engine robots can. An examination of participants' sites revealed that a large majority included meta tag keywords, which even search engines now tend to ignore (Killoran, 2009).

On the other hand, some sites embedded their site text in graphics, flash files, frames, pop-ups, JavaScript, and other complex formats, design choices that could be attractive for human audiences but could also be inaccessible or problematic to search engine robots.

Of course, most keywords were scattered throughout these sites' text-based pages, not ensconced within any format more distinctive than a plain paragraph. Given the technical communication field's orientation to human audiences and participants' own writing expertise, participants discussing their SEO techniques often spoke not so much of keywords but of good written content in genres familiar to human readers, such as newsletter articles. Yet they were mindful that such content would be read by search engines too, and that search engines especially favor frequently changing content laced with keywords. For instance, one participant, whose company's services included such SEO specialties as Web design and online marketing, explained her site's success attracting search engine traffic by pointing to its frequently published written content:

> We focus on getting quality content from our company out on the Web. Some examples are press releases, blog entries, comments on other blogs, event postings, and articles. Having continual, keyword-rich, high-quality content helps us. We use paid search on a very limited basis.

She rated search engines as helping a lot in leading people to her site, which was the source of about half of her technical writing clientele.

Likewise, several participants discussing written content in genres designed for human audiences also raised its effect on search engines. For instance, some participants justified their blogs in part because the loquacious, frequently updated content would appeal to search engines. Such an effect was observed by a participant who maintained a blog on her business site for a little over a year before discontinuing it: "I think it was quite useful for my business and will maybe start again someday. However, I don't think it made a real difference in the amount of business that I received from my site, although it did produce a lot of listings in the search engines." Despite her blog's negligible impact on her clientele, she nevertheless rated search engines as helping a

lot in leading people to her site, and estimated that at least 20% of her clientele originated primarily through her site. Her site also featured extensive FAQs, which she believed few of her human visitors bothered to read, a perception shared by some other participants about their sites' written content. One such participant, whose home page had an eye-catching design, suggested that the page design is for human audiences, whereas the written content is for search engines: "I hate to admit this, but most people are much more effected [sic] by the visuals, and a lot of them don't even read the copy. I doubt anyone has ever read the long article I have on my homepage. I put it there for SEO 'lift.'" Such comments illustrate how writing seemingly designed for a business's human audience can have a different, sometimes even greater, impact on its search engine audience, and that some participants, aware of this effect, used it as part of their SEO strategy.

Businesses' Home Page Titles

Length of titles To understand how technical communication businesses employ specific SEO techniques, I turn here to examine in detail businesses' home page titles, first measuring their length, the object of RQ1a. All home pages in the sample included title tags. Titles averaged 6.5 words in length and 53 characters in length, including spaces, less than the approximately 64 characters and spaces that are typically displayed on SERPs. The medians were somewhat lower yet: only six words and 46 characters, numbers that would seem to

offer few opportunities for matches with search queries. However, as discussed above, using the full space available on SERPs is not necessarily advantageous to reach either search engine or human audiences. Some businesses nevertheless opted for long titles that would likely appear truncated on SERPs: 28% of titles (67) surpassed 64 characters. Several of the longer titles were formatted not as phrases but as lists of keywords, suggesting that they might have been written not primarily for human readers but for search engines. Consider one site's 14-word title: "writing skills training effective writing business writing [business principal's name] [business name] plain language." Such a breathless string of keywords might puzzle prospects who visit the site to assess the business's writing expertise. However, it is easily parsed by search engines, though search engines like Google would be suspicious of the four-time repetition of "writing" (including in the business name) and could demote the site for keyword stuffing. A few other titles were similarly composed without expected punctuation, perhaps to avoid diluting the impact of the keywords with characters (punctuation marks) that would figure neither in search queries nor in search engines' ranking algorithms.

Content of titles Analysis of the titles' thematic content, the object of RQ1b, revealed that a large majority of titles (86%) included the name of the business or, less commonly, the principal (see the "All sites" column in Table 1), perhaps a necessary choice for a business site's home page title. However, except

Table 1: Percentages of home page titles featuring thematic keywords, and differences between search-promoted and search-unpromoted sites[a]

Keywords in title tag	All sites[b]	Search-promoted sites ($n = 141$) %	Search-unpromoted sites ($n = 69$)[c] %	Difference[d] z
Business's or principal's name	86	88	80	1.58
Business services[e]	62	65	59	0.82
Geographical location	12	13	7	1.33

[a] Search-promoted sites are those that search engines helped moderately or a lot in leading people to the sites, and search-unpromoted sites are those that search engines helped little or not at all.
[b] "All sites" also includes those in neither the search-promoted nor search-unpromoted groups.
[c] One search-unpromoted site could not be downloaded, and hence $n = 69$ rather than 70 in this analysis.
[d] z is the test statistic for the difference between the proportions of search-promoted and search-unpromoted sites that include thematic keywords in their title tag. None of these z scores is significant at the $p < 0.05$ level.
[e] Business services also includes professional roles and tag lines.

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in those cases in which the business name happens to include specific keywords such as *technical* and *writing*, such a name would likely offer few opportunities for matches with search queries from new prospects not already familiar with the business or its principal. A smaller majority (62%) included words or phrases describing services (e.g., *technical writing*) or, less commonly, professional roles (e.g., *technical writer*) or a tag line. Collectively, these tended to be richer in keywords that would match likely search queries, though the few tag lines—such as "Get [business name] to work for you!"—typically included fewer apparent keywords and seemed more oriented to human audiences who had already found the site.

Only a small minority of home page titles (12%) included a geographical term identifying the business's location. Such terms tended to appear toward the end of titles that were uncommonly long, with a median length of 10 words and a character count usually exceeding the 64 or so characters displayed on SERPs. By contrast, among the 187 sites with meta tag keywords, 45% include such a geographical term (Killoran, 2009). This difference in percentages suggests that location, though acknowledged as a potential keyword by many, might not be viewed as such a marketing priority that it deserves to be squeezed into a title, or indeed might not be conceived as the kind of information conventionally included in titles. Of course, if mentioning one's location suggests that a business would prefer to work only locally, a business reaching out to clients nationally and internationally through the Web might deliberately downplay its location.

However, mentioning one's location could also be a tactical attempt to get higher rankings from search engines. Consider the role of location in the search queries and rankings reported by a participant based in a mid-sized American city but serving clients nationally and internationally:

> Our Web site tends to be ranked highly by the search engines . . . especially queries that include [the business's city and state].… I think it helps enormously that we provide somewhat specialized services (e.g., services in the areas of XML, FrameMaker). If we provided, for

example, generic technical writing services, I think it would be more challenging to achieve a high search engine ranking.… We have noticed that companies often prefer local technical writers, but don't have the same preference for consultants and trainers (e.g., it is common to bring in a consultant or trainer from a different geographic region). Fortunately, our Web site also ranks highly in geographically-constrained searches (like "technical writer [the business's city]"), so we have been successful in drawing local and international clients from the Web site.

This participant estimated that 25–35% of his clientele originated primarily through his company's site. As he explained, in contrast with general search queries, such as "technical writer," the site ranked well for specific search queries, such as those identifying his specialized services or his geographical location. Thus, whereas general terms might appeal to a broader range of prospective clients, specific terms receive favorable treatment by search engines.

Across the entire sample, however, such generic technical writing terms as *technical* and *writer* were among the most common terms appearing in home page titles: 44% of the titles included *technical*; a similarly large minority included one or more of the words sharing the root *writ-*, as in *write, writer, writes,* and *writing*; and most titles that included one of these words also included the other (seventy-two, or 30% of the sample). Of course, in a sample selected to focus on technical communication business sites, such a concentration is to be expected. The 30% of titles that were in effect competing for the same "technical writ-" search queries could nevertheless be more distinctive and hence more competitive by the accompanying keywords in their titles. More distinctive titles could take advantage of a phenomenon known as the "long tail of search" (Sullivan, 2004, 2005): General terms such as *writer* typically appear in a high number of search queries (the wide base of the tail), whereas more specific variants such as *technical writer, medical writer, grant writer,* and so forth appear in fewer queries (the tapering middle of the tail), and, as suggested by the participant quoted above,

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very specific variants like *technical writer [city]* appear in fewer yet (the slender segment of the tail leading to the tip). In a crowded worldwide marketplace, small businesses can successfully compete by targeting search queries near the tip of the tail (Ledford, 2008), which might also draw the more committed searchers.

Many titles, however, also included terms that were unlikely to be used in search queries for technical communication businesses. Among the top half-dozen title terms was the generic Web site term *home*, appearing in 38 titles (16%), sometimes even in a title's high-valued first-word spot—words placed earlier in a title are thought to carry more weight in search engine algorithms (Ledford, 2008, p. 98, 295). The similarly redundant *welcome* (what business would not welcome its visitors?) appeared in an additional 10 titles (4%), in all cases as the valued first word. In addition, among the top title terms was the word *and* or symbol *&* (77, or 32%), along with lesser quantities of articles (e.g., *the*) and prepositions (e.g., *to, in*). These are known as "stop words," which many search engines typically ignore (Ledford, 2008, p. 90). In many cases, such stop words are required in order that titles make sense to their human readers, but for search engines their inclusion could dilute the weight of the remaining keywords.

Also in deference to human readers, or to convention, the majority of titles included punctuation, and not just the expected colons and commas but also a variety of stylish marks seldom seen in titles of sober technical communication documents: dashes, vertical bars ("|"), slashes ("/"), colons used in pairs ("::"), ellipses, and others. As mentioned above, search engines are indifferent to punctuation, so such typographic creativity would likely have been designed for the benefit of impressionable humans, though even human readers would most notice such usage when viewing not these businesses' home pages but rather SERPs, where these eye-catching titles would be prominently displayed.

In sum, this quantitative analysis of home page titles' content reveals that participants varied in how they oriented their site titles to audiences that include both humans and search engines. A large majority made the obvious and perhaps necessary choice to include the business's name or principal's name regardless of how well or poorly it would match likely search queries. Only a smaller majority made the less obvious but perhaps

optimal choice to describe their services, typically with keywords that would likely appear in relevant search queries. Only a small minority included a reference to their geographical location, despite the advantages such a reference could provide to their search rankings in a competitive worldwide medium. By contrast, a majority devoted limited title space to stop words or punctuation marks, many of which are useful to human audiences but none of which are useful to search engines.

Comparison of titles Several of the quantifiable features of titles were also examined to determine whether they were presented differently in sites that were more successful attracting search engine traffic in contrast with sites that were less successful, the objective of RQ2a and RQ2b. Such attraction levels were determined by the survey question asking how much search engines helped in leading people to these business sites. To operationally define the two relative levels of attraction, nonnumerical responses ("don't know," "not applicable," and blank responses) were set aside and the range of numerical response options was divided in two: the higher ratings of either 3 or 2 defining the "search-promoted" sites ($n = 141$), and the lower ratings of either 1 or 0 defining the "search-unpromoted" sites ($n = 70$). (See Killoran, 2009, 2010, for more detailed discussions of these survey results.)

As shown in Table 2, the home page titles of the search-promoted sites averaged about one word

Table 2: Number of words and characters featured in home page titles of search-promoted and search-unpromoted sites[a]

Title features	Search-promoted sites (n = 141)		Search-unpromoted sites (n = 69)[b]		Difference
	M	*SD*	*M*	*SD*	*t*
Word count	6.81	5.20	5.85	4.36	2.19*
Character count	55.50	36.29	46.35	27.87	2.02*

[a] Search-promoted sites are those that search engines helped moderately or a lot in leading people to the sites, and search-unpromoted sites are those that search engines helped little or not at all.
[b] One search-unpromoted site could not be downloaded, and hence n = 69 rather than 70 in this analysis.
* $p < 0.05$

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more than those of the search-unpromoted sites, a difference that is statistically significant ($p = 0.03$). A similar comparison showed that the titles of the search-promoted sites averaged about nine characters more, a difference that also is statistically significant ($p = 0.045$). Hence, measured by quantity, the home page titles of the search-promoted sites offered more content. As for what that content consisted of, the results are less definitive. As shown above in Table 1, no significant differences at the $p < 0.05$ level were found for title keywords or phrases specifying a business's or principal's name; its business services, professional role, or a tag line; or its geographical location. In all these cases, however, slightly higher percentages of search-promoted sites featured home page titles with such thematic content, suggesting a possible trend. Hence, it would appear that technical communication businesses more successful at attracting search engine traffic are composing longer home page titles than are their less successful competitors, but aside from such a quantitative difference, their titles' qualitative differences remain unclear.

Businesses' Inbound Links

Generating inbound links Unlike home page titles and other site features, which site authors themselves control, many inbound links are beyond such direct authorial control and so have to be elicited, a practice that is the focus of RQ1c. Aside from creating links from other sites they owned or registering their sites with directories like Yahoo's, participants mentioned a variety of ways to elicit such links: asking other webmasters for links, joining professional organizations that post directories of members' sites, creating content for other sites that would also feature links back to their own sites, and posting informative content on their own sites that would attract inbound links from others.

Among these, asking other webmasters for links was not viewed favorably. For instance, one participant who mentioned the practice also anticipated some of its objectionable methods: "Getting other sites to link is usually just a matter of asking. However, I don't solicit links from businesses or people that I don't have some other relationship with. I don't use an e-mail blast to ask for links." Similarly, another participant suggested that such links could appear unprofessional:

"[Most other sites], of course, want a reciprocal link, something we don't do to reduce amateurish-looking clutter on the site."

Participants more favorably mentioned links from sites of professional and business organizations with whom they had memberships:

- Regional or specialized technical communication organizations, such as STC chapter sites, some of which feature links to their members; the Institute of Scientific and Technical Communicators and its Independent Authors Special Interest Group (www. qualityauthors.co.uk); the Northwest Science Writers Association (www.nwscience.org); and the European Medical Writers Association (www.emwa.org)
- General communication-related organizations, some representing writers locally, such as the Colorado-based Boulder Writers Alliance (www.bwa.org); or representing independent professionals, such as the Association of Professional Communication Consultants (www. consultingsuccess.org)
- Various general business organizations, such as local chambers of commerce and organizations of women business owners

Participants also mentioned generating links to their sites through their work creating content that gets posted on other sites along with their Web address:

- Designing Web sites for other organizations and including a webmaster's link back to their own
- Posting writing on other sites, such as articles, wiki contributions, and comments on others' blogs
- Posting to Web-based discussion boards
- Being quoted as an expert in someone else's article

Ledford (2008) presents Web 2.0 social media as one of the most promising sets of SEO tools, and in this study the Web 2.0 medium most often mentioned was blogs. At the time these interviews were conducted, the professional social networking site LinkedIn did not yet have the widespread participation it has now, yet it occasionally came up in the sampling process, the interviews, and the site analyses. However, no participants specifically mentioned links from social networking sites like Facebook, social bookmarking sites like del.icio.us, micro-blogging tools like Twitter, or other

Web 2.0 media, though at the time these interviews were conducted most such media were relatively new and not yet widely exploited for business marketing purposes.

Finally, participants discussed creating and posting informative content on their own sites that could induce others, such as the EServer Technical Communication Library (tc.eserver.org), to link back to their sites. For instance, one participant maintained a site that, apart from a few pages promoting her business and its services, featured dozens of nonpromotional, informative pages devoted to her professional writing specialty. She rated links from other sites, along with Web searches, as the only methods that helped a lot in leading people to her site, though apparently through little deliberate promotional effort of her own:

> My site gets promoted passively because many prominent and reputable organizations, institutions, businesses and business sites link to my site—too many to list; I think there are several hundred. I know there are many universities, non-profit organizations, and public libraries, for example. I did not ask them to link; I assume they linked because they found my content useful. Very few of them asked permission, but some did. I do monitor my search rankings but rarely change any aspects of my site—it ranks very highly for many of my keywords. I have never really done anything to affect my search engine rankings. They have always been pretty good, so I don't see any point in messing with them. I haven't changed my keywords or meta descriptions in years.

Despite her seemingly passive approach to SEO, her site ranks among the top 10 sites in the sample as measured by either the Google-generated or Yahoo-generated tallies of inbound links. Alas, this participant's site was atypical, as most of the sample's brochure-type business sites did not appear to have generated such a widespread following.

Numbers of inbound links Tallies of inbound links could offer an objective assessment of how much participants developed this SEO technique, the object

of RQ1d. However, Google's and Yahoo's advanced search functions reported vastly different numbers of inbound links, with Yahoo typically reporting ten times or more the number. Yahoo's reports included links from its own overlapping directories, links from Web 2.0 media, and many others that Google typically overlooked, but also including what appeared to be duplicate counts of the same link and links from pages I could not access or in which I could find no such outbound link. Of the 240 home pages in the sample, Google reported that 82, more than a third, received no inbound links whatsoever, and only 3 received more than 100 inbound links. By contrast, Yahoo reported that only 2 home pages received no inbound links whatsoever, and an impressive 92 (38% of the sample) received more than 100 inbound links, including 20 that received more than 1,000. Other researchers have observed that Google's tallies are the less reliable ones (Bifet et al., 2005; Evans, 2007); Google apparently knows about many more links than it is willing to share (Official Google Webmaster Central Blog, 2007a).

According to the more comprehensive Yahoo-generated data, the median number of inbound links across the sample was 58. For a sample of mostly small, brochure-type marketing sites, unlikely to attract a large following on the initiative of others, this figure suggests that many technical communication businesses must have been taking some initiative themselves to elicit inbound links, whether intentionally or as a side effect of their participation in the Web's communities. The sites with the largest numbers of inbound links seemed to have attracted many of their links from their owners' participation in Web 2.0 media: their own postings to blogs, discussion forums, and wikis; other bloggers' blogrolls; and so forth. These Web 2.0 sources varied widely in their relevance to technical communication: Loosely aligned Web 2.0 communities can host contributions on a variety of topics, and business principals sometimes seem to have pursued personal, not professional, interests. As some search engines, notably Google, factor in the relevance of two linked pages to each other, these links would carry widely varying weights in the search engine's ranking algorithms.

Comparison of numbers of inbound links Though the uneven quality of such data discourages a precise

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analysis of the myriad link sources, a quantitative analysis can nevertheless broadly indicate whether participants' development of this SEO technique is related to their success attracting search engine traffic, the objective of RQ2c. As explained above, each site was identified as a search-promoted or search-unpromoted site according to how helpful search engines were rated in leading people to the site, and sites without such a numerical rating were set aside. Based on the more reliable Yahoo-generated tallies, the remaining 211 sites were rank ordered from #1 (fewest inbound links) to #211 (most inbound links). A Mann-Whitney U test indicated that the search-promoted sites rank significantly higher ($U = 3163.5$, $z = 4.24$, $p < 0.001$, with the sum of the ranks totaling 16,717.5 for the 141 search-promoted sites and 5,648.5 for the 70 search-unpromoted sites). The median search-promoted site received more than double the number of inbound links than did its less promoted counterpart, 88 and 34 respectively. Such results indicate that the SEO technique of generating inbound links could contribute to the success of technical communication business sites at attracting visitors through search engines.

Participants' Attitudes Toward SEO

To interpret these results for what they say about technical communication businesses' Web marketing practices, it is important to consider participants' disparate attitudes toward SEO. As described above and elsewhere (Killoran, 2009), some participants were quite mindful of search engines as important Web site audiences, consciously employing SEO techniques when composing their site text, conducting test searches, and diligently monitoring their site rankings. For instance, the participant quoted above explaining how he laced his site with "spider food" also described the effort he invested in understanding SEO in general and his own site traffic in particular: "I try to keep up with the latest trends in the SEM…industry. This includes reading newsletters, blogs, and forums— almost on a daily basis. I also study my server logs to find out how people get to my sites and whether they leave or dig deeper." He and many other participants received substantial portions, in some cases majorities, of their clientele primarily through their sites.

Yet even some such relatively successful participants struggled to master SEO techniques and to further their site's success. For instance, one participant presented what would seem to be a record of SEO success, rating search engines as very helpful in leading people to his site, and reporting, "Most all new clients found me through the site or after being directed to it." Yet, even he acknowledged being perplexed by the arcane workings of search engines and opaque Web analytics (traffic monitoring) tools:

> I'm still leaning [sic] how to get . . . search engine responses to "[business's U.S. state] technical writing" or "[business's city] technical writing." To do this, I keep refining the meta tag for keywords and some of the lead page paragraphs…. I come up on some search engine listings when I do the search[es] that I referred to above. I monitor the site traffic carefully and get an average of about 50-hits/day. Some are from search bots and others, I hope, [are from] people searching. Analyzing the statistics is a challenge because I don't totally understand the jargon used in the endless array of tables on the stats page.

Other participants similarly indicated that they had only a modest grasp of SEO.

However, unlike these two participants quoted above, some participants were not all that interested in SEO, to the degree that a few indicated they had not even bothered to register their sites with search engines. Some explained that "chasing SE rankings," as one put it, was too laborious, time-consuming, or costly; or that they did not need more clients, especially the sort of clients who would rely on search engines; or that they simply had not yet gotten around to SEO. A particularly critical view was expressed by a U.S.-based participant who served clients from throughout the United States and Europe, and who estimated that 10–19% of her clientele originated primarily because of her site. Despite such apparent SEO success, she nevertheless played down the importance of SEO in her business marketing strategy:

I use my site as an online portfolio, and in that role it's been very useful. My site is intended to act as a trust builder for people who have heard about me through other means, such as from a talk at a conference or from a prospecting email I've sent. It's not designed to pull in clients through web searches, although it has done that. I've discovered that most prospects who find me through Google, etc. are not the kinds of clients I want to work with (they're too small or inexperienced). I ended up rewording my home page to filter those people out so I wouldn't waste time on bids. I would caution tech writers not to spend lots of time and money on SEO and focus instead on getting their URL out through talks at conferences, publications in trade magazines, comments on professional blogs, etc.

In her survey responses, she rated search engines as moderately helpful in leading people to her site, but not as helpful as her own Internet use, her speech communication, and referrals. Whereas this article has been illustrating how search engine and human audiences are different, this participant's comments also illustrate how human audiences who use search engines might themselves be different from those who do not.

Collectively, participants' disparate attitudes toward SEO likely expressed themselves in similarly disparate levels of commitment to such SEO techniques as home page titles and inbound links, and so these disparate attitudes should inform any conclusions about participants' SEO practices.

Implications for Technical Communicators

This study has explored how businesses offering technical communication services engaged in the fairly new communication practice of SEO. SEO can enrich technical communicators' growing corpus of best practices in Web writing, design, and usability for human audiences by adding another kind of Web site audience. Human and search engine audiences do not necessarily

invite divergent communication strategies—indeed, what works well with one often works well with the other. However, as this study has illustrated, they do invite a different vision of Web textuality: not just whole documents and genres but disparate collections of keywords and links. And as a result they also invite technical communicators to consider different questions about their Web site: not only how one's human audience navigates and reads the site but also how search engines might do so; how that human audience might phrase their search queries before they even arrive at the site; how competitors for the same search queries have phrased their Web sites; and not only what is within one's site but also what environment or community of Web sites beyond might link to one's site.

As specialists in communicating to human audiences, technical communication businesses would not necessarily approach a search engine audience naturally, or enthusiastically. This study found that, in general, businesses seemed to write more optimally for search engines where the techniques for both search engine and human audiences are similar. Fortunately, they often are: Search engines' ranking algorithms to some degree emulate the behavior of human audiences, according greater value to factors that human audiences would more highly value, such as informative titles and relevant links. On the other hand, businesses seemed to write less optimally for search engines where the techniques for search engine and human audiences could diverge, such as in inefficiently phrasing their home page titles.

Of course, search engines are at best an intermediary audience leading to the targeted human audience of prospective clients, and not all technical communication businesses were strongly motivated to reach that intermediary audience. However, in a challenging economic environment, reaching prospects by any means at all can offer an advantage. Even prospects derived through referrals or networking might conduct a Web search to perform due diligence on a technical communication business before committing to becoming clients. SEO would enable such prospects to find the business site more efficiently, and some of the writing techniques discussed above would take only a few moments of attention. Given the effort and expense these businesses have already undertaken to construct

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and maintain their business Web site, those few moments could turn out to be a cost-effective investment. Ideally, such a decision would be based on marketing strategy, not on a lack of SEO know-how.

This study also sought a snapshot of what currently passes for SEO best practices—or at least more effective SEO techniques—among technical communication businesses. Quantitative analysis of the internal factor, home page titles, found that those of sites that were more successful attracting visitors through search engines are significantly longer than those of sites that were less successful. Thematic analysis of these titles found no significant differences in the occurrences of keywords that would be used in search queries for small businesses, though the more successful sites showed slightly greater tendencies to feature such keywords. Quantitative analysis of the external factor, inbound links, found that the more successful sites received significantly more than did the less successful sites. These differences with two key SEO factors suggest that technical communication businesses' differing levels of success at drawing visitors to their sites through search engines are likely partly due to differences in SEO techniques, not just differences between high-demand and low-demand technical communication service specialties or differences in regional market conditions or other such extraneous factors. The finding that longer titles are related to greater success with search engines adds further evidence to the unresolved discussion of optimal title length (Ledford, 2008; Malaga, 2007; Moran & Hunt, 2006; Sweeney, 2008). Although it has long been recognized that higher numbers of inbound links are related to greater success with search engines, this study was able to extend such an association to relatively inconspicuous sites whose link tallies typically number only in the dozens.

Titles and inbound links are two key factors within and beyond Web sites, but Google's ranking algorithm alone factors in more than 200 variables. Hence, just adding an extra keyword or two to a home page title, or eliciting a few extra inbound links, might not have a noticeable impact on a Web page's rankings. However, differences in these two key factors suggest that many other such differences might exist among technical communication business sites, differences that would influence their rankings relative to each other and also offer businesses an incentive and a means to improve their own site's rankings. For instance, many of the points made about how home page titles could be written more effectively for SEO would of course apply to the titles of other pages within a site and also apply more generally to the writing of page headings, lead paragraphs, anchor text of links, and other features of a Web site's textuality.

This study focused on technical communication businesses, but its implications could be extended to most technical communicators, whether the Web site they contribute to is their own or their employer's. Most technical communication documentation finds its way onto some kind of digital network or database, whether the public Web or a private organizational intranet or even the help system of a software application. There, it might lie in relative obscurity until users manage to unearth it through some search functionality. Technical communicators with SEO know-how could better ensure that their work gets found. SEO practices are becoming increasingly complex as search engine algorithms become increasingly complex, but such know-how is also becoming increasingly valuable as digital networks host an ever larger share of the world's documentation and SEO practitioners become more competitive. As experts in communicating technical information to human audiences, technical communicators tend to have the analytical and language skills that would make them well suited to master the kinds of communication techniques that impress search engines. The SEO field is still relatively young, with almost half the respondents in a recent survey of SEM practitioners reporting less than three years of experience (SEMPO, 2007). Yet their earnings appear comparable to, if not higher than, those of technical communicators (STC, 2007), a testament to how highly companies now value SEM know-how.

Technical communicators and businesses looking to further develop their know-how will find, in addition to the research cited in this article, many free and timely resources available on the Web:

- SEMPO's Web site (www.sempo.org) offers, in addition to organizational information and industry news, an ample "learning center" featuring publicly accessible research, articles, and other resources about SEM.

- Search Engine Watch (searchenginewatch.com) is a long-established information hub featuring timely search engine data, articles, newsletters, and conference information.
- Some search engines, such as Google, post SEO guidelines for Web site content, design, and technical features (2009e). Google also offers the free Web analytics tool Google Analytics (www.google.com/analytics/).

For technical communication instructors responsible for developing the Web design knowledge and skills of their students, introducing search engines as a distinct kind of audience, rather than just a technical tool, can create legitimate space for studying SEO techniques amid the rhetorical objectives of Web design courses. It is worth noting here the views of a participant quoted above (the "spider food" specialist), who was strongly committed to SEO and quite successful at it:

> I strongly feel that colleges and universities should start incorporating SEO writing skills into their curricula. The real challenge will be to write headlines and ledes that have strong keywords and yet aren't just a string of boring text. [U]nderstanding basic SEO is critical for professional writers in the 21st century.

As this participant and this study's results suggest, writing for both kinds of audiences simultaneously can be a challenging college-level skill, one that students preparing for Web-related professional practice ought to master.

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The Contribution of Technical Communicators to the User-Centered Design Process of Personalized Systems

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Abstract

Purpose: This article discusses how personalization will affect technical communication practitioners' everyday work, and indicates to researchers which knowledge gaps scientific research needs to fill.

Method: After a description of how personalization exactly works, we demonstrate that the technique is very similar to the approach to personalization as applied in ancient rhetoric. Next, we describe how the history of the concept "the audience," and how it has been analyzed and approached, has led to the tactic of electronically tailoring communication to individuals. We propose the User-Centered Design approach as an approach that can help the designer get to know the individual user, thereby increasing the fit between personalized systems and users' needs, wishes, and contexts.

Results: We discuss how the User-Centered Design approach needs to be adjusted to cope with the demands personalization places on the approach. Furthermore, we consider the technical communicator's role in this design process.

Conclusion: Technical communicators need to devise and lead user studies that inform and evaluate each step of the personalization process. Researchers need to focus their efforts on studies that aid the design of personalized systems, like discerning in which situations personalization is of added value or not, and identifying the factors that influence the acceptance of personalization.

Keywords: personalization, User-Centered Design, usability, user modeling, audience analysis

Practitioner's Takeaway

- When designing for personalization, practitioners need to take into account specific usability issues, like a loss of controllability and the risk of a diminished breadth of experience.
- When designing user studies that inform the design of personalization, one has to take into account the different steps of the personalization process. Each step of this process has to be designed for, and evaluated separately.
- Technical communicators can be the linking pin in the personalized system design team, who can maximize the fit between users and tailored output.

Introduction

In 1998, three Amazon.com employees filed a patent for a technique that generated product recommendations automatically (Linden, Jacobi, & Benson, 2001). What makes these product suggestions special is the fact that they are personalized. In the Amazon case, it means that each individual customer receives a unique set of recommendations based on his or her previous purchases. By giving customers proposals on the basis of their previous behavior, Amazon tries to recommend items that are more relevant for the individual client. Ultimately, these recommendations must, of course, lead to higher sales. Since 2001, Amazon recommendations have become a great success and the most well known form of personalization to the public at large.

Besides Amazon's recommendations, many other forms of personalization have developed. Personal TV guides, pre-filled online forms, and intelligent tourist guides are just a few examples. The widespread introduction of personalized features in (online) systems might make it necessary for technical communicators to reconsider their role in the system design process. Is personalization "business as usual"? Does it have implications for the way in which one must approach an audience? Can one still speak of an audience at all, if everybody receives unique system output? And finally, does personalization influence the application of design and evaluation activities technical communicators normally deploy? This article seeks to provide answers on these questions. In order to do so, we will first discuss in more detail what personalization exactly entails (Personalization: An Overview). Next, in the Section "Personalization, Rhetoric, and the Audience," we will show that personalization is the logical result of the changing nature of audiences and the ways in which rhetoricians (or, as they are known in the modern communication landscape, communicators) have studied and approached them. In "User-Centered Design of Personalized Systems," we propose the User-Centered Design approach as a way to design electronic communication for "audiences of one" and set out the implications of personalization for this approach. We complete this article by outlining in the section "Technical Communication and the User-Centered

Design Process of Personalized Systems" the role of the technical communication practitioner and researcher in optimizing the design process of personalized systems.

Personalization: An Overview

A Short History of Personalization

The idea of personalizing electronic output arose in the early 1980s (Weibelzahl, 2003). According to Brusilovsky (2001), the first research on personalization dates to the early 1990s, with the amount of research done on the topic taking off after 1996. This was due to the growing popularity of the World Wide Web and the possibilities it offered for creating personalized media content. Furthermore, by then researchers realized that personalization proved to add value and was therefore worth pursuing. Finally, around this time, the commercial sector realized that electronic personalization could be a fruitful replacement of the mass marketing techniques applied up to that point. Hence, the use of personalized marketing features was introduced, thereby offering personalization to the public at large (Kobsa, 2001).

In 2001, Kobsa, Koenemann, and Pohl (2001) identified three emerging and promising forms of personalized output: (1) recommendations, (2) guidance and orientation, and (3) personal views and spaces. Recommendations have indeed turned out to be a successful application of personalization, with the aforementioned recommendations by Amazon.com as the most well known personalized application. The second form of personalization, personalized guidance and orientation, deals with offering users a personal path through a system (e.g., a Web site) by means of displaying personal buttons or creating a personalized tour. Contrary to the expectations of Kobsa and his colleagues, this kind of personalization has not been widely adopted by the market yet. Finally, the third form of personalization, personal views and spaces, provides users with personal home pages on which personally relevant content and links are displayed. This form of personalized output is present on many governmental Web sites (e.g., the Canadian My Government site: http://www.canada.gc.ca). The commercial sector has also adopted this technique. The best known

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commercial examples include last.fm (with a personal overview of the music a user has been listening to) and the many personal overviews mobile telephone service suppliers offer (displaying a client's calling behavior).

Although the exemplary systems in this section have different goals, their workings are roughly the same. In the next sections we will elaborate on the two phases that are elemental in the process of creating tailored output: user modeling and personalizing output.

User Modeling

Before system output can be personalized, for each user a file must be created, called a *user model*. In this model, information about a particular user is stored. On the basis of the information stored in the user model, the system determines if output needs to be tailored for the individual and, if so, in what form. It is also possible to tailor output to a homogeneous group of users. In this case, the personalization of output is based upon a *group model*: a file containing information about a particular group of users.

User modeling is concerned with the creation of a valid model of an individual user. Based on Kobsa et al. (2001), we list the kinds of data that can be used to create a user model:

1. User data:
   - Demographic data
   - User knowledge
   - User skills and capabilities
   - User interests and preferences
   - User goals and plans
2. Usage data:
   - User clicking
   - User viewing times
   - User ratings
   - User tags
   - User purchases or related actions
   - Browser actions (e.g., saving, printing)
3. Environment data:
   - Software environment
   - Hardware environment
   - User location

These data can be collected implicitly and/or explicitly. If data are collected only implicitly, they are

inferred from user behavior. When personalization is based upon implicitly collected user data, the system is *adaptive*. Users can also explicitly state what they would like the personal output to look like, which is then stored in the user model. In this case, a system is *adaptable*. Many personalized systems offer adaptive as well as adaptable features (Wu, Im, Tremaine, Instone, & Turoff, 2003).

A personalized system collects one or more kinds of data and then applies rules to interpret these kinds of data. For example, if John uses an online bookstore to purchase biographies of the painters Van Gogh, Monet, and Renoir, the system may deduce that John is interested in books about Impressionist painters. Consequently, this interpretation is stored in John's user model. To discuss the methods of acquiring and interpreting the kinds of data listed above would be a technical matter and outside the scope of this article. We refer those who are interested to Kobsa et al. (2001).

Personalizing Output

Once a user model is created, it can be used to decide whether or not to tailor output. If the rules in a system lead to the decision to tailor output for an individual, many different techniques can be used. Several overviews of these techniques have been published (Brusilovsky, 1996, 2001; Kobsa et al., 2001; Knutov, De Bra, & Pechenizkiy, 2009) that display a large degree of overlap. Based on these overviews, we list the possible forms of personalized output.

1. **Adaptation of content.** This type of personalization deals with tailoring the content of an entire or parts of a communication message (e.g., a Web page or a video), or one or more fragments thereof. In the first case, there will be different messages prepared for different kinds of users, and the system will decide which message will be presented to each user. When one or more fragments of the message will be personalized, there exists a general message that will be presented to all users, but certain parts will be tailored by, for example, leaving out parts or rearranging the text in the message to better suit the receiver.
   Examples: Amazon's book recommendations; the adaptable home pages of major search engines like Google (*i*Google) and Yahoo! (My Yahoo!).

2. **Adaptation of presentation.** This type of personalization deals with tailoring the layout of a message or the modality in which it is presented. *Examples:* A Web site that provides content in different modalities to print-disabled users; a Web site that only shows text when accessed by means of a mobile phone.

3. **Adaptation of navigation.** This type of personalization deals with tailoring the way in which a user navigates through a system (e.g., a Web site) or through the Internet in general. In the case of a closed hyperspace like a Web site, the adaptation can take the form of creating personalized tours, hiding links, or sorting links personally. Personalizing navigation in an open hyperspace, like the World Wide Web, is mostly done by means of personalized search engines. *Examples:* A search engine that removes results that are irrelevant for a specific user; a digital museum guide that only displays art pieces of the user's favorite artists.

4. **Adaptation of user input.** This type of personalization deals with tailoring the text in entry fields, which originally had to be filled in by users themselves. This text can either be incorporated from a user's user model or be collected from a connected system in which the user also has a user model and the required information is already known. Furthermore, information submitted by the user can be expanded with user-related data. *Examples:* Pre-filled online government forms; automated tagging of photos uploaded to a photo-sharing service.

5. **Adaptation of collaboration.** This type of personalization deals with initiating the interaction between two or more people working with the system. This might be done, for example, by psychologically profiling a large group of users and, on the basis of these profiles, bringing together those personalities that, in theory, will work well together. At this time, this kind of personalization is very novel and has been implemented in only a few systems.

In this section, we have described the generation of personalized system output, a process that requires several steps, such as user modeling and personalizing output. This makes it different from the generation of "traditional" one-size-fits-all output, which is relatively straightforward. Personalization can be seen as a specific way of analyzing the audience and, consequently, tailoring communication. In that sense, personalization is not only a technical process, but also a rhetorical process.

Personalization, Rhetoric, and the Audience

In order to get to the source of personalization, we must go back to ancient Greece. In *Phaedrus*, which Peters (1999) characterizes as the first book on communication science, Socrates and Phaedrus discuss love and the foundations of rhetoric (Plato, trans. 2005). While discussing these foundations, a fictive Socrates states:

> Since the power of speech is in fact a leading of the soul, the man who means to be an expert in rhetoric must know how many forms soul has. Thus their number is so and so, and they are of such and such kinds, which is why some people are like this, and others like that; and these having been distinguished in this way, then again there are so many forms of speeches, each one of such and such a kind. People of one kind are easily persuaded for one sort of reason by one kind of speech to hold one kind of opinion, while people of another kind are for some other sorts of reasons difficult to persuade (p. 271, c10–d5).

Socrates explains here that people are not alike, but are individuals with unique characteristics, or small groups of similar individuals. Each individual or small homogeneous group is best persuaded by applying a tailored rhetorical approach.

After stating that there are different kinds of people who require different kinds of persuasion, Socrates describes the competences a rhetorician needs to create

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a speech that is tailored to the characteristics of the listener and that thereby achieves successful persuasion.

> …when he both has sufficient ability to say what sort of man is persuaded by what sorts of things, and is capable of telling himself when he observes him that *this* is the man, *this* the nature of person that was discussed before, now actually present in front of him, to whom he must now apply *these* kinds of speech in *this* way in order to persuade him of *this* kind of thing when he now has all of this, and has also grasped the occasions for speaking and for holding back, and again for speaking concisely and piteously and in an exaggerated fashion, and for all the forms of speeches he may learn, recognizing the right and the wrong time for these, *then* his grasp of the science will be well and completely finished, but not before that (p. 271, e1–272, a5).

The competences that Socrates mentions also describe the steps by which a rhetorician must tailor a speech. First, the rhetorician has to identify the individual listener ("*this* is the man"). The rhetorician then needs to get to know and understand this individual listener ("*this* [is] the nature of person […] now actually present in front of him"). For each individual listener, the rhetorician can decide upon a suitable goal to be achieved by means of rhetoric ("to persuade him of *this* kind of thing"). Taking the individual listener's characteristics and the goal to be achieved into consideration, the rhetorician needs to decide upon a suitable communication strategy ("he must now apply *these* kinds of speech"). And even these

strategies can be tailored into specific presentation forms ("apply *these* kinds of speech in *this* way in order to persuade him"). In short, the steps to create a personalized message are, according to Socrates:

- Identify the individual.
- Get to know the individual.
- Set a communication goal for the individual.
- Tailor the rhetorical approach to the individual.
- Tailor the communication content to the individual.

Interestingly, these steps resemble the steps in the personalization process as performed by many personalized systems. In Table 1, we have listed the rhetorical steps to personalization side by side with the steps of the technical personalization process, as characterized in Paramythis and Weibelzahl (2005). The table shows that in both approaches to personalization, first, the user is identified. Then, the rhetorician has to get to know him or her, or a user model has to be created. Next, a communication goal is set, while in the technical counterpart it is decided whether personalization is appropriate in a given situation and what this personalization should entail. And finally, the actual content of the message is tailored.

Although the steps in both processes are very similar, the means by which the personalized message is conveyed are very different. Socrates argued that tailoring a speech to the individual can only be done by means of personal conversations (Peters, 1999). The written word, or broadcasting in general, is to be considered an inferior means of communication, as the message to be communicated cannot be geared to the characteristics of an individual, and thereby loses persuasive strength.

Table 1. A comparison of rhetorical steps and the personalization process

Rhetorical Steps	Personalization Process
Identify the individual	Identify user
Get to know the individual	Collect user data
	Interpret user data
Set a communication goal for the individual	Decide upon personalization
Tailor the rhetorical approach to the individual	Apply adaptation
Tailor the communication content to the individual	

And when once it is written, every composition trundles about everywhere in the same way, in the presence both of those who know about the subject and of those who have nothing at all to do with it, and it does not know how to address those it should address and not those it should not (p. 275, e1).

Socrates believed personalized messages to be more persuasive than general ones. And for many centuries, face-to-face communication was the only means to guarantee that personalization could be successful. However, the possibilities for tailoring mediated messages to an audience (or to audience segments) have changed due to the evolving nature of audiences, new methods of analyzing these audiences, and advances in technology. Ultimately, this has led to a situation in which personalization can be achieved electronically. In the next sections, we will set out how the view on "the audience" has evolved. This will show how the ancient starting point (personalization by means of face-to-face communication) has changed into the current situation (personalization by means of interactive media), and what consequences this has for the design of systems that aim at an audience of one.

The Audience

Audience is the term that originally was used for the spectators in ancient Greek and Roman theaters and arenas, gathered to view a play or spectacle. Different kinds of events would attract different kinds of audiences, varying in, for example, education or social status. In the last 500 years, technological innovations have transformed the way in which we approach and perceive audiences, who have evolved from relatively small and homogeneous groups of people into large and heterogeneous masses catered to by the mass media. This process primarily started in 1456 with the invention of printing, which allowed communicators to communicate their message to a larger and often unknown audience. Several centuries later, the industrial revolution and urbanization created a situation in which large geographically concentrated audiences could be reached more easily by means of newspapers and movie theaters. In the 1920s, the introduction of commercial broadcasting further reduced the limitations of the

mass media's dependence on location. National radio shows, and a few decades later television shows, created nationwide audiences. Finally, the growing availability of Internet connections in the 1990s created the possibility for communicators to reach people, unconstrained by any geographical boundaries.

Creating one definition of "audience" to fit all the different strands of research that focus on addressing audiences is impossible (Webster, 1998). With this in mind, McQuail (1997) constructed a typology of "audiences" that spans the different research focuses. His typology classifies the research focuses on audiences by using a societal or a media perspective and subsequently a macro- or micro-level view.

On a macro-societal level, an audience is a group of people who can be considered a collective before their identification as an audience. An example of such an audience are the employees of an organization who are addressed through a company newsletter. The audience on a micro-societal level is the individual who chooses for himself or herself which TV program to "consume" or which Web site to visit. This view of the audience is central in the uses and gratifications theory, originally developed by Katz, Blumler, and Gurevitch (1973). According to the uses and gratifications theory, each media consumer consciously chooses the medium and message he or she wants to consume in order to fulfill a certain need (e.g., being informed of the latest news or being entertained).

McQuail's other perspective on audience, the media perspective, approaches people as a mass. On a macro level, a media audience consists of all the people who consume media content transmitted by one particular medium (e.g., the television audience or the book-reading public). More specific is the media audience on a micro level. This is the audience of one particular medium transmission. What binds these people is their consumption of a certain medium transmission (e.g., Monday night's eight o'clock news) and not their shared psychological or demographic characteristics.

The societal perspective on audiences can be characterized as a bottom-up perspective and focuses on the individual's motivations to consume certain media content or the small group's commonalities that makes them interesting as a media audience. The media perspective is a top-down one. Instead of perceiving the individual or small group as the

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main party in the act of media consumption, the media perspective perceives the medium or a single transmission as the instigator of media consumption to which an audience is drawn. This perspective is prominent in media research and the design of media content (McQuail, 1997). In order to grasp commonalities among audience members, and to gear their communication toward these commonalities, players in the media analyze their audiences.

Analyzing the Audience

The goal of audience analysis is "to identify its needs, document the perceived costs and benefits of addressing the needs, and formulate a program that addresses the needs in the most cost-beneficial manner to both the [receiver] and the [sender of the message]" (Lefebvre & Flora, 1988, p. 303). Napoli (2008) has outlined the evolution of audience analysis, a process strongly influenced by technological innovations. In the pioneering days of the mass media, audience analysis was performed by means of what Napoli calls the *intuitive model*: Communicators applied their common sense and "gut feeling" to characterize their audience and to determine how it could be served best. After the Great Depression in the United States, the need for a better understanding of the audience arose as movies were becoming more expensive to produce and competition among media was growing. Therefore, a more systematic approach to audience analysis was applied. Sources such as box office figures, radio sales, or letters of complaint were used to deduce who was receiving the message and how it was appreciated. In the 1970s, the introduction of electronic information systems facilitated new ways of analyzing audiences. Large quantities of data could be easily collected (by means of sales systems or television set-top boxes), analyzed, and interpreted; and, as a result, a shift in focus took place. Instead of focusing on the number of people who had received a message and on their reception of the message, audience analysis increasingly focused on the demographics of the audience.

With the growing use of the Internet and the development of technologies like data mining, audience analysis has reached a whole new stage. The technological developments have provided an opportunity to collect data about individual audience members and to scrutinize their behavior at an extremely detailed level. It is, for example, possible to track and record an online bookstore customer's behavior via mouse clicks, viewing times, purchases, book ratings, etc. Subsequently, these data can be used to create a user model that states this user's tastes in literature, inferred on the basis of, for example, owned books. In short, user modeling has made it possible to analyze audiences at a more detailed level than was possible before.

Targeting Audience Segments

As audience analysis was becoming a systematic undertaking, communicators—marketers in particular—realized that they could communicate more successfully if they addressed a small homogeneous segment of an audience instead of a large and heterogeneous population (Haley, 1968). In order to create advertisements that would have a higher persuasive effect with a specific subsection of the audience, Smith (1956) introduced "audience segmentation." Audience segmentation has been defined as "the process of identifying groups of customers who are relatively homogenous in their response to marketing stimuli, so that the market offering can be tailored more closely to meet their needs" (Brennan, Baines, & Garneau, 2003, p.107). Audience segmentation, and the subsequent targeting of communication and product design at each segment, is done to find new, previously unaddressed target groups and to improve upon the communication to (potential) clients (Beane & Ennis, 1987). Ultimately, it has the potential to cater to the specific needs of customers and thus increase customer satisfaction and customer loyalty (Van der Geest, Jansen, Mogulkoç, De Vries, & De Vries, 2008). According to Baines, Fill, and Page (2008), there are three kinds of criteria by which an audience can be segmented:

1. Behavioral criteria—e.g., similar purchases or similar technology usage
2. Psychological criteria—e.g., similar lifestyle or attitudes
3. Profile criteria—e.g., similar demographics or socioeconomic characteristics

Although segmentation has been reported to be beneficial when marketing products, it has also been heavily criticized by scholars. The major criticisms of dividing an audience into segments are that there is no a

priori segmentation approach that yields the best results, audience segments are often not discriminating and overlap, and, finally, segments are not stable, as people's characteristics and interests change constantly (Hoek, Gendall, & Esslemont, 1996). These drawbacks have led communicators to consider other ways of targeting their communication, mostly by focusing on individuals and addressing their unique characteristics, needs, and contexts (Kara & Kaynak, 1997).

In the area of mediated communication, the possibilities of targeting communication at individuals have grown rapidly with the introduction of user modeling. Based upon a user model, an intelligent system can tailor output to each individual's unique needs, wishes, and context: personalization. Together with user modeling, personalization changes the way in which communicators perceive and communicate with their audience. As a result, one can wonder what the importance and meaning of a concept like "audience" entails in this context. When the audience at large is replaced by a collection of individuals who are to be addressed with an individual message, do we even need a concept of "audience"?

Witnessing the End of the Audience as We Know It

Driven by advances in technology, the role of the individual audience member has transformed from a receiving party to the individual who is actively involved in the creation of a message. This shift is made possible by technological advances like hypermedia, cross-media, and user-generated content. Hypermedia has introduced a way of media consumption in which the individual audience member has gained control over the order in which content is consumed (Cover, 2006). And due to another innovation, cross-media, a message is not distributed by means of only one medium, but by different media that augment each other. For example, a television channel broadcasts a documentary about genetically modified rice, after which a Web site facilitates a discussion on the topic between experts and viewers of the television broadcast. At the moment of writing, the latest development that has transformed the role of the audience is user-generated content (UGC). The Organisation for Economic Co-operation and Development (2007) has defined UGC as publicly available user content in which creative effort has been invested and that is created outside of professional

routines and practices. Well-known examples of UGC collections are Flickr (www.flickr.com), where Web site visitors can place and tag (label) photos, Wikipedia (www. wikipedia.org), a Web site where users can coauthor and coedit an encyclopedia, and Yahoo! Answers (www. answers.yahoo.com), a Web site that offers people the possibility to pose all sorts of questions and publish answers to other persons' questions.

Newly available technologies have enabled individuals to publish and personalize their own media content. As a result, the audience has transformed from a collective mass, traditionally addressed with one-way communication media, to unique individuals who are offered a more and more active role in the construction of a message (Livingstone, 2003; Tauder, 2005). This transformation is reflected in three changes in the traditional roles of communication senders and receivers and their relationships with each other (Bruns, 2007):

1. Senders do not consist of selected individuals or groups anymore, but of (a community of) different people with their own geographical location, knowledge, etc.
2. One person may assume different roles: generating the message at one moment, and consuming it at the other.
3. A message is continuously being created and is never finished.

These changes cast a new light on the traditional roles that senders and receivers have been allocated in communication theory in the past. People can be senders and receivers at the same time and later become only receivers again. The roles of senders and receivers were conceived to be predefined and static, but are now dynamically assigned, depending on the task at hand. Communication has become a collaborative effort. As a result, professional communicators—and especially professional communicators working in the field of new media—should ask themselves whether they should still consider their target groups as audiences, as collective masses to be reached with one general message. Might it not be better to take a micro-societal view of the audience, the individual, and to reconsider the role of the individual in message construction and consumption?

The aforementioned changes in mediated communication make the term *user* more appropriate

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than *audience member* for characterizing the individual interaction with novel communication techniques like UGC and personalization. A user is an individual who can take on different communicative roles within one specific situation of use, like receiving and contributing content. In contrast, audience members are part of a mass, are primarily on the receiving end of communication, and are relatively passive during information consumption.

The shift of focus from a collective audience to individual users, served by personalization, requires a change in message design. The tools on which communicators have relied for decades are to be replaced; user modeling takes the place of audience analysis; and segmentation is put to its extreme in the process of personalization. As personalized messages are extremely sensitive to a correct correspondence with the individual's needs, wishes, and context (Kara & Kaynak, 1997), a heavy focus on the individual user throughout the design process is conditional (Canny, 2006). One way to ensure this correspondence is User-Centered Design.

User-Centered Design of Personalized Systems

In the mid-1980s, two publications introduced the User-Centered Design (UCD) approach (Gould & Lewis, 1985; Norman, 1986). In essence, UCD is a design approach in which the (prospective) user is the focus of attention and is consulted in all phases of the system design. In their landmark article, Gould and Lewis (1985) list three principles of UCD:

1. *An early focus on users and tasks.* Users should be consulted as early as possible, before system design, about their characteristics, needs, and wishes.
2. *Empirical measurement.* Studies should focus on actual user behavior and be conducted empirically.
3. *Iterative design.* Every substantial new version of the system should be tested with users, and the results of these studies should be incorporated in the next version of the system.

Later, they added a fourth principle, stating that systems should not be designed in isolation, but that all system aspects affecting usability (e.g., help functions or using multiple channels) should be designed in accordance and under one management body (Gould, Boies, and Lewis, 1991). These principles remain very abstract. In order to increase the practical value of the approach, Maguire (2001) divides the system development process into five phases (e.g., requirements engineering, design, and formative evaluation) and for each phase lists the methods that can be of value in a UCD process.

Technical communicators, with their UCD skills as well as their understanding of communication, are excellent candidates to take on a lead role in the UCD process of personalized systems: as the user's advocate. This is a role technical communicators have often occupied, so how is it different for personalized systems? Traditionally, design has centered on abstractions of users, like audience segments or personas. System output had to comply with the needs, preferences, and contexts of these groups. When dealing with personalization, technical communicators' focus should be on the individual user. They have to ensure that personalized output is usable and useful for every individual working with the personalized system.

Preventing and Identifying Usability Problems

Several authors have discussed how one can evaluate personalized systems. Gena (2005) and Gena and Weibelzahl (2007) have listed the methods that one can possibly apply during the UCD process of a personalized system. And although these overviews are a good reference point for the decision of which method to use at a given moment, they do not present a coherent approach in which multiple methods are used and geared toward each other. These overviews and several other publications, for example Höök (1997) and Weibelzahl (2005), have listed some pitfalls and ways to overcome them. The majority of these issues concern the design of a valid effectiveness measurement of a personalized system. The issue of applying UCD design methods for understanding how users experience personalized output, and how this experience can be improved upon—as in, for example, Van Velsen, Van der Geest, and Klaassen (2007)—is rarely addressed in the literature.

Two publications that give shape to the user experience with a personalized system have been written by Jameson (2003, 2007). In these book chapters, he lists

seven usability issues that have a critical influence on users' satisfaction with personalization. These usability issues are not new, but with the rise of personalization, they have acquired a new meaning and increased importance. They are:

- *Predictability*. Users must be able to predict the consequences of their actions for the generation of personalized output.
- *Comprehensibility*. Users must be able to understand how user modeling and the tailoring of system output works.
- *Controllability*. Users must be able to control their user model and the generation of personalized output.
- *Unobtrusiveness*. Users must be able to complete their tasks without being distracted by personalization features.
- *Privacy*. Users must not have the feeling that the generation of a user model infringes on their privacy.
- *Breadth of experience*. Users must not lose the possibility of discovering something new because output only complies with their user model.
- *System competence*. Users must not have the feeling that the system creates an invalid user model or does not personalize output successfully.

In order to ensure that a personalized system is designed such that it counters the possible negative effects of these issues, they have to be taken into account throughout the design process. This means an extension of the responsibilities for technical communicators involved in the design of personalized systems. They have to make sure that activities deployed before and during design, as well as evaluations, take the pitfalls and usability issues for personalization into account.

A Layered Approach to Designing Personalized Systems

Design or evaluation activities of personalization should not approach the personalization process as a whole. Rather, the process should be "broken down" into several steps, so as to make it possible to prevent or pinpoint problems (Brusilovsky, Karagiannidis, & Sampson, 2001; Paramythis & Weibelzahl, 2005). Each step, then, will have to be designed on the basis

of a user study, or should be evaluated separately. Such design and evaluation activities should have the goal of keeping to a minimum any errors made while interpreting information about the user, or reasoning on the basis of this information. The steps of the personalization process, listed by Paramythis and Weibelzahl (2005), can serve as the basis for breaking up the process of personalization:

1. Identify the user.
2. Collect user data.
3. Interpret user data.
4. Decide upon personalization.
5. Apply adaptation.

However, it is best to approach personalization in the steps that correspond with the steps in the personalization process, applied by a particular system. In the literature, such a broken-down approach is called a *layered approach*. Each step has to be designed and evaluated in isolation and in each step the technical communicator can be of great help by applying a user-centered focus. We will now discuss the technical communicator's role in each step, based upon the overview of the layered approach as discussed in Paramythis and Weibelzahl (2005).

The first step deals with *identifying the user*. For technical communicators, this means that they must be able to define suitable groups for which output can be personalized. This applies when personalization is targeted at groups and not at individuals. Such a decision can be based upon a study that has the goal to identify homogeneous subgroups in a heterogeneous population. Once a working prototype of the system is available, technical communicators must be able to design evaluations that tell whether the identification of relevant subgroups was correct. In the case of personalized book recommendations targeted at groups of customers, for example, one can decide that a relevant subgroup consists of "people who buy cookbooks with recipes for pasta dishes." However, a more relevant group might be "people who buy cookbooks on Italian cuisine," as they will receive more diverse, but still relevant, recommendations.

The correct *collection of user data* is often a technical matter and outside the expertise of technical communicators. For example, if a system uses gaze data to determine what a certain user is looking at, correct

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collection of user data deals with whether the recorded data correspond with what the user was looking at. However, also in this step, the technical communicator can add value. Product recommendations, for example, can be based upon age, as they might provide 50-year-olds with music from the '60s, while teenagers are predominantly recommended music that is popular at the current moment in time. To inform the system, users might be able to enter their birth date in an electronic form, but might do this wrong. This leads to incorrect user data and as a result, the user may be recommended music that is not very interesting. Technical communicators have to make sure that user errors that lead to incorrect data collection are prevented.

In the third step *data are interpreted*. Technical communicators have to aid the design team when deciding on which data the system has to use and how they will be interpreted. When designing book recommendations, for example, one will have to decide upon a set of data that can model the user's reading preferences. Are past book purchases indicative of reading preferences? Or is browsing behavior in the store's collection more informative? Or should one opt for a combination of both sets of data? Such decisions can be made on the basis of a user study that should determine which data set (or combination of data sets) models reading preferences best. For example, in a Wizard of Oz study one could simulate the acquired user models for several users, using different data sets. Then, these users can be asked to judge the quality of the interpretations about their person, stored in the different models.

The fourth and fifth steps are *deciding upon personalization* and *applying personalization*. Technical communicators have to make sure that personalization at a certain moment adds value and that the reasoning on the basis of the user model as performed by the system is correct. Evaluations of (prototypical) personalized systems have to point out at what time personalization adds value. For example, can book recommendations be based on the purchase data of two books? Or does one need to have bought 20 books before the user model is "rich" enough to lead to useful recommendations? And if the moment is appropriate, evaluations have to point out the quality of personalization. Is this book one I would like to read? Is this book a new discovery, or do I already know of its existence?

During evaluations it is important that results allow the technical communicator to pinpoint problem areas. If an evaluation only indicates that book recommendations do not fit the individual user, it is difficult to state where the problem lies. Is the system modeling the user incorrectly by interpreting the purchase of books on the history of Japan as an interest in the history of Asia, while the user is only interested in Japan? Or is the user model correct, but the fault lies in the fact that the system reasons that a user who is interested in the history of Asia will also be interested in the economy of Asian countries? Without breaking up the personalization process in underlying steps, and evaluating each step separately, an evaluator will never know. Therefore, evaluators need to create an evaluation design that informs them on the different steps of the personalization process. For example, one can ask participants to interact with the system. Then, participants can be asked to judge the quality of the recommendations and to give their rationale behind this judgment. Finally, evaluators can create printouts of the acquired user models and can ask participants to comment on their user models. This way, more detailed feedback on the personalization process can be generated.

Technical Communication and the User-Centered Design Process of Personalized Systems

UCD for Personalization and the Technical Communication Practitioner

Communication professionals will have to lead user studies that inform the digitalization of the different steps of the personalization process. They will have to devise and carry out studies that determine which input data are necessary for generating valid information about the user and to optimize its collection. Programmers can then convert the results of these studies into algorithms and system code. Technical communicators also have to be able to design evaluations that inform the design team on the personalized system's performance on the different steps of the personalization process, and how this

performance can be improved upon. During all these activities, the communication professional must keep the usability issues for personalization in mind.

The design team of a personalized system is preferably interdisciplinary. The technical communicator can be the linking pin of the design team who can maximize the fit between users and tailored output and, consequently, ensure the success of a personalized system. However, a thorough understanding of the personalization process and knowing how to evade common design and evaluation pitfalls are critical.

A Technical Communication Research Agenda for Personalized Systems

For practitioners involved in the design or evaluation of personalized systems from a user perspective to successfully carry out their work, having the right tools and insights on personalization is a necessity. Therefore, communication researchers need to focus their attention on several matters, so as to give technical communicators these tools and insights.

First and foremost, the added value of personalization for different kinds of systems (e.g., prefilled government forms or personalized tourist guides) needs to be assessed from a user perspective. However, in the literature, effectiveness studies of personalized systems rarely focus on user effects (Van Velsen, Van der Geest, Klaassen, & Steehouder, 2008). In order to decide whether it is worth the effort to design a personalized system for a given task, it needs to be clear whether or not it is a worthwhile financial investment. Summative evaluations investigating the users' perspective on the quality and the usefulness of personalized systems, combined with the personalized system's performance on effectiveness metrics, can inform decision makers about whether such an investment is sensible (Díaz, García, & Gervás, 2008). These kinds of evaluations, combining a user and a system perspective, are lacking in the current studies on personalized systems.

Second, studies that identify the factors that affect the acceptance and adoption of personalized systems need to be conducted. With knowledge of these factors, those who practice UCD can deploy meaningful and value-adding requirements engineering, design, and evaluation sessions. In the literature, overviews of these factors of personalized

systems are virtually nonexistent, except for the case of personalized e-government services, where Pieterson, Ebbers, and Van Dijk (2007) have listed several user and organizational obstacles. Researchers need to identify factors that influence user acceptance and adoption of personalization.

Third, the requirements engineering stage of a UCD approach is focused on generating requirements that align with prospective users' needs, wishes, and contexts. For the case of personalization, Gena and Weibelzahl (2007) have listed several methods that can be deployed here. However, these methods are discussed in isolation, while the requirements engineering process is a process that needs to be iterative and that needs to apply various methods geared to each other. Requirements not only need to be elicited from prospective users, their implementation in system design also needs to be checked with prospective users. An integrated, multimethod requirements engineering approach for personalized e-government services has been suggested and demonstrated by Van Velsen, Van der Geest, Ter Hedde, and Derks (2009). Future research has to point out how to deal with the specific intricacies of personalization in this stage of system design for the different types of personalized systems.

Fourth, design guidelines that inform the interface and interaction design of personalized systems are required but scarce. Some high-level guidelines regarding the specific usability issues for personalized systems are reported by Jameson (2003, 2007). On a more specific level, Tintarev and Masthoff (2007) list several guidelines for the design of explanations of personalized recommendations, and Schiaffino and Amandi (2004) discuss the interaction design of personalized interface agents. However, apart from a very limited number of overviews, the designer of personalized systems is left to his or her own insights in the design phase. Research should point out how the interface and interaction of personalization should be designed in such a way that the specific usability issues for personalization can be prevented.

Fifth, during the formative evaluation stage of a personalized system (focused on gathering input for redesign), one needs to choose an applicable method for gathering the data one requires. The (dis)advantages of traditional evaluation methods

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have been extensively studied, but these studies have taken the assumption that system output is the same for every user in every context. In the case of personalized systems, this assumption no longer holds. It is unclear how suitable the traditional methods are to assess the specific usability issues for personalization. Future research has to point out to what degree we can use traditional or novel evaluation methods for the evaluation of personalized systems.

Concluding Remarks

This article is meant as a call to action, both for communication professionals and communication researchers. We believe it is time for the technical communication community to embrace personalized technology and to make it part of their practical expertise and research focus. The development of, and research into, personalization has, until now, been dominated by a technical point of view. By contributing from their user-centered perspective, technical communication professionals can make a huge difference in the usability and added value of personalization.

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QuikScan: Formatting Documents for Better Comprehension and Navigation

Quan Zhou and David K. Farkas

Abstract

Design: QuikScan is an innovative format that makes print and online documents more usable. QuikScan employs within-document summaries formatted as numbered list items. These numbers correspond to numbers placed in the body of the document where the summarized ideas are discussed in full. QuikScan enables readers to (1) read summaries instead of the detailed content, (2) use the summaries as previews, (3) navigate quickly to the place where a summarized idea is fully discussed in the body of the document, and (4) direct other individuals to locations in the document. QuikScan is nonproprietary; anyone is free to use it and adapt it to their needs.

Requirements: QuikScanning requires the skills of a talented editor and takes practice to master. QuikScanners must choose among four kinds of summaries and three numbering systems, depending on the document's heading structure and other factors. Document elements such as graphics require special techniques. The list items that make up QuikScan summaries must be skillfully written, and target numbers must be placed with care.

Results: Empirical studies have demonstrated that QuikScan improves comprehension and the ability to navigate quickly through a document. In addition, QuikScan is regarded positively by readers. A pilot study suggests the value of QuikScan for blind readers.

Drawbacks and limitations: QuikScan requires extra work, makes documents longer, and increases both visual complexity and the number of short pages. It is not suitable for documents that do not much benefit from summarization or for documents with free-form layouts.

Keywords: QuikScan, summaries, document format, layout, reading comprehension

Practitioner's Takeaway

- QuikScan is a better way to format many kinds of print and online documents.
- Research shows that QuikScan increases reading comprehension and the reader's ability to navigate within the document. Also, readers like using QuikScanned documents.
- To QuikScan, you add within-document summaries with numbers keyed to numbers placed in the body of the document.
- QuikScan is nonproprietary. Anyone can use it and adapt it to their needs.

QuikScan

Introduction

QuikScan is a newly developed, innovative document format that facilitates reading comprehension and the reader's ability to navigate within a document. It uses within-document summaries to enable readers to quickly identify and absorb the key points of a document. Readers readily figure out how QuikScan works and like using QuikScanned documents. We believe that QuikScan holds considerable promise for improving the usefulness of a wide range of documents, both print and online (Zhou, 2008). This article explains the benefits of QuikScan and how to use it. QuikScan is nonproprietary; anyone can use QuikScan freely and can extend or modify it to meet their own needs.

The use of summaries and abstracts is a very prevalent and successful strategy in information design (Lorch & Lorch, 1995; Nevid & Lampmann, 2003). Summaries and abstracts, however, almost always come at the beginning of a document or at the beginning of a chapter. QuikScan adds special types of summaries throughout the document.

There are four types of QuikScan summaries. The most prevalent type, the Standard Summary, is shown in Figure 1 along with a small portion of the document that is being QuikScanned. The summary takes the form of a box consisting of numbered list items followed by right braces. In Figure 1, for instance, there are three numbered list items. Each number corresponds to a "target number" placed in the body of the document that indicates where the summarized idea is discussed in full. Readers use the summaries to identify ideas of interest and then quickly scan the body text for the target number with its target text. Figure 1 and other figures in this article showing QuikScan summaries are somewhat unrealistic due to the need to limit the size of the figures. In many instances, the expanse of text following a summary is significantly longer than what is shown in the figures, and so the reader is skimming further into the body of the text to find target numbers. To ensure that the target numbers stand out from the surrounding text, they are bolded, highlighted, and preceded by a left brace and a blank space.

There are four productive uses of QuikScan summaries. A reader can

1. Read summaries instead of the detailed content.
2. Use the summaries as previews, thereby increasing comprehension.
3. Use the numbered list items to quickly navigate to the place in the text where the summarized idea is fully discussed.
4. Direct other individuals to a location in the body of the document, as in "Ninad, please check the provision regarding export policy. That's target number 64."

QuikScan requires the skills of a talented technical editor or someone else with both first-rate language skills and a good grasp of the audiences, purposes, genres, and uses of functional documents. You can QuikScan documents while they are being planned and written, during the editing process, or after they have been written. To become a QuikScanner, you must learn the moderately complex conventions of the QuikScan format and do some practicing. The complexity of QuikScan, however, goes largely unnoticed by the reader; QuikScan is highly intuitive and can be explained in a brief handout.

This article explains all but the subtleties of QuikScan. The QuikScan web site (www.QuikScan. org) explains special issues and provides sample QuikScanned documents, a QuikScanner's quick reference, tutorials, a handout for new readers of QuikScanned documents, and other resources.

Because the basic idea underlying QuikScan is simple and robust, it can be used in many circumstances, such as business meetings in which a medium-to-long document is the focus of discussion (Zhou & Farkas, 2006). If the document under discussion has been QuikScanned, a poorly prepared attendee can much more easily get the gist of each part of the document that is being discussed and therefore participate productively in the meeting. QuikScan also holds promise as an assistive technology for blind readers. In a pilot study, a blind reader used a QuikScanned document with text-to-speech software (Zhou, 2008). With conventional formatting, this individual often waits impatiently for the software to pronounce the information he wants.

Proxy Caches

7} Proxy caches are used by large organizations to serve many users.

8} Users can request a proxy cache through a setting on their browser, or requests from browsers can be redirected automatically through "interception."

9} Because proxy caches are shared caches, they re-use a single representation and reduce latency and network traffic.

{ 7 Proxy caches work on the same principle as browser caches, but serve hundreds or thousands of users; large corporations and ISPs often set them up on their firewalls or as standalone devices (also known as *intermediaries*).

{ 8 Because proxy caches aren't part of the client or the origin server, but instead are out on the network, requests have to be routed to them in some manner. One way to do this is to use your browser's proxy setting to manually tell it what proxy to use; another is using interception. Interception proxies have web requests redirected to them by the underlying network itself, so that clients don't need to be configured for them, or even know about them.

{ 9 Proxy caches are a type of shared cache; rather than just having one person using them, they usually have a large number of users, and because of this they are very good at reducing latency and network traffic. That's because popular representations are reused a number of times.

Figure 1. A QuikScan Standard Summary and the body text that is being summarized

He was very enthusiastic about QuikScan because he could listen for the previewed ideas in the summaries and then use the Find feature of his word processor to jump directly to this information. We think that more uses for QuikScan may be found.[1]

Research on QuikScan

In addition to the pilot study referred to above, QuikScan has been empirically tested by researchers at the University of Washington (USA) and the University of Twente (The Netherlands). At the University of Washington, two empirical studies on an earlier version of QuikScan tested QuikScan's effectiveness for reading comprehension and retention and for navigation. In the first study (Zhou & Farkas, 2007; Zhou, 2008), 40 university students read either a QuikScanned document or a non-QuikScanned version of the same document and answered comprehension questions.[2] This study showed that QuikScan improves reading comprehension by 13%. To determine

whether QuikScan improves retention, the subjects returned a week later and answered a resequenced version of the original questions. Although the readers of the QuikScanned version scored higher in the retention test, the results did not achieve significance, probably due to the smaller number of students (28) who participated.

In the second study (Zhou, 2008; Zhou & Farkas, 2009), 40 participants read either a QuikScanned or a non-QuikScanned version of the same document used in the first study and performed navigation tasks based on a questionnaire. Those who used the QuikScanned version found information much faster, although they did not achieve significantly lower error rates. When surveyed, they indicated a highly favorable attitude toward QuikScan.

In a recent and as yet unpublished study by Van der Meij & Van der Meij (2009) at the University of Twente, QuikScan readers scored 41% better in a comprehension test. Twenty university students read a complex book chapter which had been QuikScanned, and 20 read a version of the same chapter to which a structured abstract had been added.[3] Structured abstracts employ headings that map the document's own headings and are demonstrably superior to conventional abstracts (Hartley, 2004). Although the QuikScanned document was 9.7% longer than the version with the structured abstract, the difference in reading times was insignificant. Both groups of participants expressed positive attitudes toward the format they had used. In sum, these studies provide strong evidence that QuikScan improves comprehension and navigation and elicits favorable responses from readers.

QuikScan

Drawbacks and Limitations

QuikScan does have drawbacks and limitations. An obvious drawback is that QuikScanning a document requires extra work, in particular, formatting the summaries and writing the list items. Some of the extra writing effort, however, is recouped because the list items become a good starting point for writing an executive summary or abstract that would likely be written anyway. Summaries can be formatted efficiently using the shortcut techniques available in full-featured word processing applications. Working in MS Word 2007 and using the QuickParts feature, we insert a single-cell table containing a numbered list. In most situations, we can make list item numbers increment automatically as each summary is inserted. Even so, because of the extra effort, QuikScan will most often be used for relatively high-value documents, such as documents that will be broadly distributed or will be the basis of important decisions. Two further drawbacks are that QuikScanning adds length and visual complexity to a document and (as explained below) increases the frequency of short pages. A final drawback is that when someone reads summaries rather than a complete document, the person gradually loses context that will be helpful when reading deeper into the document. But this is the price we always pay when we choose to save time by reading selectively.

One limitation of QuikScan is that it is not well suited for manuals, lists of product components, and other genres in which the key information consists of specifics (such as numbered steps) that do not benefit much from summarization. QuikScan is best suited for reports, white papers, technical briefings, textbooks, and other expository genres.

A second limitation pertains to documents with elaborate layouts. QuikScan is difficult or even impossible to implement with multiple columns of varying widths, free-form grids, and other complexities characteristic of newsletters and many web site home pages. However, if such documents are intended only for on-screen reading, the QuikScan summaries can be implemented as Adobe Acrobat sticky notes (small pop-up windows) and so will not interfere with the layout. Documents with straightforward, two-column layouts present no problems for QuikScan. With certain kinds of formatting, such as strict two-page spreads, QuikScanning should be done while the document is being planned and written.

Finally, while this is not exactly a limitation, some documents are formatted in a highly visual manner and may already include various kinds of previews and summaries. In other words, if the document already has ample QuikScan-like components, there is less reason to QuikScan it. Notwithstanding these drawbacks and limitations, there are, we believe, many instances in which readers will greatly benefit from and appreciate the use of the QuikScan format. We now explain the following:

1. The four types of QuikScan summaries
2. QuikScan's three numbering systems
3. Special techniques
4. How to write list items and place target numbers in the text

The QuikScan Summaries

QuikScan summaries should appear at regular intervals throughout the document and more frequently in the more important portions of the document. Summaries are boxed, and we favor using a light background color (such as 15% grayscale). For several reasons, long summaries should be avoided: (1) Long summaries are burdensome to read. (2) Because a summary should not be split between pages, long summaries will increase the frequency with which the QuikScanner needs to force a page break and thereby create a short page preceding the summary. (3) Long summaries can result in excessive distance between list items and their target numbers. For example, if a summary contains 20 list items, the final target number will be a long distance from the summary.

QuikScan employs four types of summaries: Standard Summaries, Compound Summaries, Floating Summaries, and Descriptive Summaries. Collectively, these four types of summaries will accommodate a great many of the variations we see in the formatting of expository documents.

Standard Summaries

The Standard Summary, shown above in Figure 1, is the most prevalent type of QuikScan summary. It appears directly after a heading and usually summarizes the entire section of the document (up to the next heading). Many documents employ straightforward heading structures and can be QuikScanned simply by adding Standard Summaries and perhaps a few Floating Summaries (explained below). Here we explain the use of Standard Summaries in two special cases.

Ignoring one of two introductory headings. One special case arises when a document employs a heading (say, a first-level heading) followed by a brief preview sentence stating that Topics A, B, and C will now be discussed. Following is a second-level heading that introduces the section on Topic A. The QuikScanner may choose to ignore the first-level heading and place a Standard Summary (which summarizes Topic A) directly after the Topic A heading. (Very possibly, the QuikScanner will do the same after the Topic B and Topic C headings.) Similarly, if a document employs two headings without any text following the first of the headings ("stacked headings"), the QuikScanner decides which of these two headings should be followed by the Standard Summary.

Ignoring a minor heading. Sometimes, a heading (say, a second-level heading) is followed by an ample expanse of text and then by a third-level heading that is followed by a short expanse of text (most likely a paragraph or two). If the QuikScanner decides that this short section is of lesser importance or can be regarded as an extension of the previous section, the

> 47} **Implementation Considerations**
>
> 48} **Caching with password-protected pages**
> Password-protected pages will not be cached by default. You must make them public with a Cache-Control public header.
>
> 49} **Security concerns for cached pages**
> Unscrupulous system administrators can use caches to gather information about page visitors.
>
> 50} **Keeping statistics for page visitors**
> You can determine when your pages have been accessed by making part of the page uncacheable.
>
> { 47 **Implementation Considerations**
>
> Here are three considerations you should keep in mind when deciding whether to use Web caches and how you will implement them.
>
> { 48 **Caching with password-protected pages**
>
> By default, pages protected with HTTP authentication are considered private; they will not be kept by shared caches. However, you can make authenticated pages public with a Cache-Control public header; HTTP 1.1-compliant caches will then allow them to be cached. If you'd like such pages to be cacheable, but still authenticated for every user, combine the Cache-Control public and no-cache headers. This tells the cache that it must submit the new client's authentication information to the origin server before releasing the representation from the cache.
>
> { 49 **Security concerns for cached pages**
>
> SSL pages are not cached (or decrypted) by proxy caches, so you don't have to worry about that. However, because caches store non-SSL requests and URLs fetched through them, you should be conscious about unsecured sites; an unscrupulous administrator could conceivably gather information about their users, especially in the URL. In fact, any administrator on the network between your server and your clients could gather

Figure 2. A Compound Summary

QuikScanner can ignore the third-level heading and write one Standard Summary that summarizes both sections. QuikScanners should not carelessly depart from the conventions of QuikScan, but it is sensible to make whatever adjustments are most appropriate for the document at hand.

Compound Summaries

Some documents contain multiple short sections divided by headings and subheadings. In such cases, the QuikScanner might choose to employ multiple Standard Summaries, but often a single Compound Summary is a better choice. As shown in Figure 2, a Compound Summary appears directly before the first of a related group of short sections. The heading of each

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of the short sections is copied into the Compound Summary, and under each of these copied headings, the QuikScanner writes a brief summary of the section. List item numbers are placed before each of the copied headings. In the body of the document, the corresponding target numbers are placed before the headings. Note that in Figure 2, the QuikScanner decided not to write summary text after the first copied heading ("Implementation Considerations"). When, as often happens, the first of the sections summarized by a Compound Summary is of a higher heading level than the rest, the font size of its corresponding copied heading (as shown in Figure 2) should be larger than the font size of the other copied headings in the summary.

Floating Summaries

At times we add a summary at a logical division or transition point within a long expanse of text that does not contain a heading. The summary, in other words, is not anchored to a heading but "floats" in the body text, as shown in Figure 3. Floating Summaries prevent the preceding summary (most often a Standard Summary) from becoming too long; keep the list items close to the ideas they summarize; and mark the shift in topics, helping readers grasp the overall structure of the document. If the document contains very few headings, multiple Floating Summaries may be added. If the QuikScanner is both QuikScanning and editing the document, the QuikScanner can supply the needed heading and then add a Standard rather than a Floating Summary.

Descriptive Summaries

A Descriptive Summary, shown in Figure 4, is a means to provide a high-level overview rather than an item-by-item summary of a part of a document. The phrase "descriptive"

Figure 3. A Floating Summary consisting of three list items

comes from the familiar distinction between descriptive and informative abstracts (Alley, 1996). Whereas an informative abstract is written so that it can stand alone and does not refer to the document being summarized, a descriptive abstract describes (or "promises") what will be found in the document and usually refers explicitly to the document being summarized (e.g., "The article demonstrates that").

A Descriptive Summary consists of just one list item. Although the list item is numbered, there is no corresponding target number in the text. Whereas the decision to employ one of the other three summary types is in large part governed by the document's heading structure, a Descriptive Summary can be placed very flexibly before, after, or between headings.

Figure 4. A Descriptive Summary of an FAQ with its sole list item

Descriptive Summaries are often used when the author has done a good job presenting information in a succinct manner, perhaps as a bulleted list. The QuikScanner decides that if the reader is interested in this information, it's best to read what the author has written rather than the QuikScanner's detailed summary. Descriptive Summaries also serve to invite users to bypass a part of the document that, in the view of the QuikScanner, will be of little interest to many readers.

To ensure that readers do not try to scan for the non-existent target number, a Descriptive Summary must be readily distinguishable from the other types of summaries. For this reason, a Descriptive Summary explicitly identifies the part of the document being summarized. For example, Figure 4 refers explicitly to the set of frequently asked questions. In the following example, the Descriptive Summary refers explicitly to Appendix C:

> 57} Appendix C consists of 10 tables showing the water-level fluctuation at Albright between 2000 and 2009.

Descriptive Summaries add flexibility to QuikScan, but they should not be used too often because they do not provide the benefits of the other QuikScan summaries. Certainly, they should not be used as a lazy alternative to the other summaries.

QuikScan Numbering

QuikScan employs three different systems for numbering list items: single-sequence numbering, two-part numbering, and the adoption of the document's native numbering system.

Single-Sequence Numbering

For relatively short documents, we favor a single sequence of numbers running consecutively (start to finish) throughout the entire document. Single-sequence numbering has been used in Figures 1–4.

Two-Part Numbering

For lengthy documents, we favor the two-part numbering system, shown in Figure 5. The number preceding the hyphen represents the count of QuikScan summaries up to that point in the document. In Figure 5, the value of the first number is 15 because this is the fifteenth summary in the document. The number following the hyphen restarts with each summary.

The two-part numbering system prevents a single sequence of numbers from becoming too large. We suggest choosing the two-part numbering system if you think that single-sequence numbering might reach three digits. Another benefit is that two-part numbering is easier to update if the document is significantly revised. Finally, notice that this QuikScanner has chosen to subdivide List Item 15-1 by placing letters before the three kinds of financial instruments and adding corresponding target letters to the body of the document.

Managing risk with market-based financial instruments

15-1} Developing countries had been encouraged to manage price risk with market-based financial instruments. These are: (A) basic forwards, (B) futures and options contracts, and (C) commodity-backed derivatives.

15-2} Forward contracts provide some (usually short-term) hedge against price risk but are not ideal hedging instruments.

15-3} Futures and options contracts are better hedging instruments because they are traded on organized international commodity exchanges.

{ 15-1 Even before the collapse of the major price stabilization and compensatory schemes, developing countries had been encouraged to use market-based financial instruments and techniques to manage commodity price risk. This strategy involved the use of {A basic forwards, {B futures and options contracts, and {C a wide range of commodity-backed derivative financial instruments. These tools were either tailor-made for specific transactions or traded publicly on international commodity exchanges.

{ 15-2 Forward contracts, which are used extensively by commodity producers in developing countries (usually through brokers and other intermediaries), provide some (usually short-term) hedge against price risk. However, because of these risks of default, and several other reasons discussed in more detail in the specialized literature, forward contracts and similar instruments are generally not considered ideal hedging instruments through which to offset commodity price risk (United Nations Conference on Trade and Development, 1994).

{ 15-3 Futures and options contracts, on the other hand, are considered better hedging instruments mainly because they are traded on organized international commodity exchanges such as the Chicago Board of Trade, the London Metals Exchange, the New York Mercantile Exchange, the Tokyo Commodity Exchange and commodity exchanges

Figure 5. A Standard Summary with the two-part numbering system

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Adapting to the Document's Native Numbering System

Many documents employ a system of decimal-numbered headings and subheadings. In such cases, the QuikScanner adapts to the document's native numbering system. Because the document uses decimal numbers in its heading system, we use uppercase letters rather than numbers for list items, as shown in Figure 6. Notice how the QuikScanner is still able to subdivide the first of the list items by using numbers instead of letters.

When a Floating Summary (or several Floating Summaries) is used in a document with decimal-numbered headings, the QuikScanner uses uppercase letters for list items and continues the letter sequence from the preceding summary. In the case of a Descriptive Summary, as shown in Figure 7, the decimal numbers of the headings being summarized can be used as the list item number.

Special Techniques

The four types of summaries and the three numbering systems accommodate much of the variation we see in expository documents. However, other techniques are sometimes called for.

Figures and Tables

When authors include figures and tables in a document, they generally discuss the figure or table in the text (and provide a figure or table reference). When QuikScanning a section of text that includes a figure or table, we write a list item that summarizes the author's discussion, and we provide a figure or table reference:

> 14-4} A cataract is a clouding that develops in the crystalline lens of the eye or its envelope. (See fig. 29.)

Figure 6. Adapting to a document's native numbering system

Figure 7. A Descriptive Summary of sections 4.0 through 4.4 of a document with decimal headings

The target number appears where the figure is discussed in the body of the text rather than in the figure's caption (unless the caption is the main discussion). If a figure or table is unimportant, the QuikScanner may completely ignore it.

Coexisting with a Document's Numbered Paragraphs

At times the QuikScanner will want to place target numbers before paragraphs in the body of the document that are already preceded by a number, letter, or bullet. In such cases, the QuikScanner's target number (and in some cases target letter) will need to coexist with the native numbers, letters, or bullets. Figure 8 shows how two QuikScan target numbers (14 and 15) coexist with the author's two numbered paragraphs.

Figure 8. Two target numbers coexisting with the author's two numbered paragraphs

QuikScan Elaborations

Although QuikScan is fundamentally about summarizing the important ideas in a document, there are various situations in which the QuikScanner may want to provide extra information for the benefit of the audience. Elaborations may be added in whatever way best fits the document and the communication situation. There are no requirements except that it must be clear that the QuikScanner is adding the information.

For example, a QuikScanner might add a note to a list item so that it provides some extra background information. Or, if a QuikScanner encounters a bulleted list or table that is not well explained, the QuikScanner can add a Descriptive Summary that provides extra background or detail.

The need for elaboration may also arise when the QuikScanner is working for the audience's organization rather than for the organization that originated the document. For example, as shown in Figure 9, an

in-house editor working for an architectural firm is QuikScanning a newly received RFP (request for proposal) for the benefit of the firm's busy staff. The editor notices a parenthetical phrase suggesting that another firm may have the inside track on this project. The QuikScanner, therefore, adds a special list item, an elaborative note, to "red flag" this information for the consideration of the firm's managers.

QuikScanning a Short Document

Even readers of short documents, such as a two-page fact sheet, can benefit from QuikScan. If the document does not employ headings, the most likely choice is a Standard Summary located directly after the title. This Standard Summary may be augmented with one or more Floating Summaries. If the document contains headings, a likely choice is a Compound Summary placed directly after the title. This is shown in Figure 10. Each of the headings in the fact sheet ("Cause," "Symptoms," and "Treatment") has been copied into the Compound Summary, and each of the copied headings is followed by a list item (for example, "A parasite found in salmon . . . ") summarizing the corresponding section of the document. A single QuikScan summary is, in fact, a close relative to the structured abstracts advocated by Hartley (2004).

Writing List Items and Placing Target Numbers

The heart of QuikScan is writing the list items that collectively make up the QuikScan summaries. Below are seven guidelines. There are fewer decisions to be made regarding the placement of target numbers, but the two guidelines offered below will prove useful.

Figure 9. An elaborative note added by a QuikScanner working for the audience's organization

Figure 10. QuikScanning a short document with multiple headings

Writing List Items

1. Consider the frequency with which you are adding list items. A densely written scientific journal article will require more list items than a loosely written corporate policy statement. New QuikScanners, we think, tend to write too many list items. A very rough guideline is three to five list items per page. If a document contains a great many list items, the QuikScanner may not be rigorously selecting the key ideas in the document.

2. Each list item should be a complete, grammatical sentence, ideally no more than 25 words long. Occasionally, two sentences can be used. Terse, tightly written list items are generally desirable, but avoid syntax that may cause problems for your audience.

3. Each summary should, as much as possible, function as a standalone module. This facilitates selective reading of the document.

4. The main job of a summary is to summarize a portion of the document. However, a skillful QuikScanner can often add well-chosen words or phrases to the list items to broaden the meaning of a summary so that it can be better understood by readers who are skipping around in the document.

5. Consider using the topic sentence of a paragraph as the basis of a list item. However, your list item may need to incorporate an idea from a subsequent sentence in the paragraph. In Figure 11, our underlining shows how a QuikScanner created a list item based on both the topic sentence and the last sentence of the paragraph.

6. Concomitantly, some paragraphs start slowly and do not provide key information in the first sentence or two. Don't summarize such incidental content.

Figure 11. A list item that is derived from both the topic sentence and the last sentence of a paragraph

7. Carefully consider which ideas in the document will be summarized in greater or lesser detail. For example, in a description of a species of lizard that is geared to an audience of naturalists, it may be important for a list item to specify the kinds of insects that make up the lizard's typical diet. In a guide for lizard owners, who will be feeding their lizards commercial lizard food or table scraps, less detail regarding the lizard's diet in the wild may well suffice.

Placing Target Numbers

1. Try to place target numbers as close as possible to where the idea summarized by the list item (the target text) truly begins. You may wish to move the target number backward a sentence or two to give the reader a broader context, but keep in mind that readers can always backtrack if they feel the need for more context.

2. At times you may be reluctant to place a target number at the beginning of the target text because the writer has employed a pronoun whose referent will be unclear to the reader who is navigating from the summary to the target text. Consider adding a word or phrase (between square brackets) to clarify the meaning of the sentence. Highlight the word or phrase to make it absolutely clear that it was added by the QuikScanner:

   { 11 Because they [proxy caches] aren't part of the client or the origin server, but instead are out on the network, requests have to be routed to them in some manner.

Conclusion

Even in the age of multimedia, the Internet, and social media, extended text—both online and in print—will continue to be important, in particular for communicating large bodies of complex information. Extended text, typically augmented by visuals, permits the careful examination of sentences and paragraphs, the ability to readily compare multiple documents (Rouet, 2006), and the convenient annotation and reuse of content.

Over the last 35 years, digital technology has greatly enhanced our ability to create, modify, navigate through, and disseminate text. There has not, however, been much change in the ways in which we format extended text. Our standard formats, based in large part on simply marking hierarchical structure with headings, are not ideal, but are tacitly accepted as "good enough" (Farkas, 2005). QuikScan is superior to standard formatting in important respects and is both adaptable and relatively easy to implement. We have sought the opportunity to explain QuikScan in this publication because it is read by a large number of professionals who have the skill to QuikScan documents effectively and opportunities to pioneer innovations in information design.

Notes

[1]You may wonder why we didn't QuikScan this article. The answer is that it's confusing to add QuikScan summaries and target numbers to a document in which QuikScan summaries and target numbers are being shown as examples. One kind of document that should not be QuikScanned is an explanation of QuikScan.

[2]The document was a 10-page excerpt from Chapter II of the United Nations report, *World economic and social survey 2005: Financing for development*. The document was modified for the experiment in the following ways: Tables and charts (which were not essential to the meaning) were removed because research participants would have spent significant time examining them.

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Doing so required minor editing for continuity. Explanatory footnotes, the reference list, and a supplementary narrow column containing pull quotes were also removed.

[3]The chapter was D. B. Pillemer's "'Hearing the news' versus 'being there'" in O. Luminet and A. Curci (eds.) *Flashbulb memories: New issues and new perspectives*. East Sussex, England: Psychology Press, 2009. The case descriptions at the start of the chapter and the summary at the end were removed. The heading structure and all other formatting were not changed.

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Avon J. Murphy, Editor

Books Reviewed in This Issue

Opinions expressed by reviewers do not represent the views of the editors or of the Society for Technical Communication.

Publication Manual of the American Psychological Association

American Psychological Association (APA). 2010. 6th ed. Washington, DC: American Psychological Association. [ISBN 978-1-4338-0561-5. 272 pages, including index. US$28.95 (softcover).]
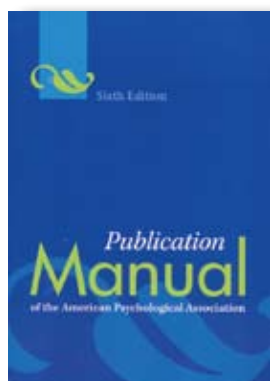
We consult a style guide for any of several reasons: requirement of work or school, need for an authoritative ruling concerning language mechanics or citation format, uncertainty about the conventions of our discipline. Since APA guidelines form the basis for house style at many workplaces, the APA *Publication Manual* has become an important reference work even for non-psychology audiences. Therefore, a new edition is a newsworthy event.

The APA has given us eight chapters: "Writing for the Behavioral and Social Sciences," "Manuscript Structure and Content," "Writing Clearly and Concisely," "The Mechanics of Style," "Displaying Results," "Crediting Sources," "Reference Examples," and "The Publication Process." The manual also includes one appendix: "Journal Article Reporting Standards (JARS), Meta-Analysis Reporting Standards (MARS), and Flow of Participants Through Each Stage of an Experiment or Quasi-Experiment." A reference list gives sources for works mentioned in the manual, and a serviceable index aids navigation with both section designators and page numbers as locators. The inside front cover has an abbreviated table of contents, helpful if you want to use the side bleeds to find material located within a specific chapter, and the inside back cover has a handy guide to where specific citation models can be found.

If you have used the *Publication Manual* before, you will immediately notice a startling change: The guide has gone from 438 pages in the fifth edition to a svelte 272 pages in the sixth. This edition has been extensively rewritten and reorganized, with some material now residing online, making the online supplemental material a vital resource for users.

You should be aware of the contents of the online supplemental material if you want to use this guide to its fullest. In it you can find not only elaborations of some of the printed material and updates to some of the examples, but also material that has superseded the printed text. For example, in the printed manual Section 3.13 discusses how to reduce biased writing on the subject of sexual orientation. The printed version cites terms such as *lesbians*, *gay men*, *bisexual men*, and *bisexual women* as being preferred over *homosexual*. The supplemental material for this section (http://supp. apa.org/style/pubman-ch03.13.pdf) suggests *queer* (which was not mentioned in the printed version) as an acceptable umbrella term for these various designations and has come down against the term *lesbians* in favor of *lesbian women*. We may assume that for this topic and many others the possibilities and preferred usages will be changing with time, so consulting the online updates will be a necessity if you want to follow the most recent guidelines.

If you found yourself squinting at the print in the previous editions, you will be pleased that the headings, leading, and general legibility of text have been greatly improved. From a navigational perspective, the editors have made mostly good decisions, with the notable exception of the edge bleeds used to indicate chapter ranges. In previous editions, these bleeds were labeled ("Stats," "Bias," "Numbers," "Tables," "Figures," and so on) so you could flip through and find material very easily without having to consult the table of contents. In the current version, the bleeds correspond exactly to the chapter divisions and are unlabelled. You must first identify which chapter is likely to contain the information you seek and then count down that number of edge bleeds or rely on page numbers, which at least have been made larger and easier to find. Running heads (absent in the previous edition) aid the navigation as well.

Many readers consult style manuals for guidance in citation formatting. As you might have expected, things have changed substantially since the 2001 fifth edition. Online availability of research materials has become quite common, and the guidelines for citing them have had to accommodate new media and new kinds of sources. One change you will notice is the dropping of the requirement to provide a date of access for online materials that are unlikely to change. Another is that

URLs for online sources need not be cited for cases in which a Digital Object Identifier (DOI), used to uniquely identify and locate published items, is available.

So what else is new in the sixth edition? Coverage of ethics and intellectual property has been reworked, and the chapter on tables and figures is considerably enlarged. The discussion of statistical methods has also been expanded. And here's a surprise: APA now recommends—but does not require—two spaces after end-of-sentence periods, a practice that had been largely abandoned with the demise of typewriters and monospaced fonts.

When the *Publication Manual* went to press, it contained many errors, some minor and some more substantial. The APA published an errata list online and offered to exchange first-print copies for corrected second-print ones. By now, most booksellers and the APA have stopped selling the first run, but if you buy from a reseller, be aware that there may still be copies for sale here and there. The copyright page will tell you which version you have.

Unlike other book-purchasing decisions you will make, the decision to acquire the latest style guide will probably depend not so much on whether you think you need to upgrade to the current version as on whether you use APA style at all. If you do, you will want to have this major revision on your shelf. As long as you can get the corrected second (or later) printing, it will be a worthwhile acquisition to your reference library.

How closely you follow a style guide's precepts depends on your needs. Recognizing that the real world is not static, the editors provide this advice, quoted from the foreword to the fourth edition: "The *Publication Manual* presents explicit style requirements but acknowledges that alternatives are sometimes necessary; authors should balance the rules of the *Publication Manual* with good judgment" (p. 5). Good advice worth repeating.

Karen Lane
Karen Lane is a freelance technical editor and indexer. She has coauthored a textbook, *Technical Communication: Strategies for College and the Workplace*, and has edited and indexed a wide variety of technical and academic materials. Karen holds a master's degree in technical communication and is an associate fellow of STC.

DITA 101: Fundamentals of DITA for Authors and Managers

Practical DITA

Darwin Information Typing Architecture (DITA): Just what is it exactly? That's a question many technical communicators are still asking. Two books published in the last year—*DITA 101: Fundamentals of DITA for Authors and Managers* and *Practical DITA*—are meant specifically for people with no prior knowledge of DITA.

Before I write anything else, a straightforward definition of DITA: "DITA is an open content standard that defines a common structure for content that promotes the consistent creation, sharing, and reuse of content" (*DITA 101*, p. 7).

DITA 101 is by Ann Rockley, Steven Manning, and Charles Cooper. All work for the Rockley Group, which specializes in developing effective reuse strategies and adopting content management solutions for their clients. *Practical DITA* is by Julio Vazquez, an information architect, DITA educator, and consultant for Systems Documentation Inc. (SDI). Prior to working for SDI, while at IBM, Vazquez was part of the technical committee that developed the initial DITA specification and language constructions.

Practical DITA is a non-programmer's beginner book for readers who want an introduction to DITA and are not afraid to dive right into planning and writing.

DITA 101 is everything you need to know about DITA from an author's or manager's viewpoint. It is also meant for the non-programmer; someone who wants to learn about DITA without having to look at the DITA specification.

Both books emphasize the importance of planning. The second chapter ("Planning the Writing Project") of *Practical DITA* covers the basics of technical writing: identifying the audience, analyzing goals, and turning goals into tasks. Vazquez very clearly teaches you how to plan and prepare your document before doing any actual writing. *DITA 101* takes a more big-picture approach in the "Planning for DITA" section, calling for the developing of a unified content strategy to define how your organization will work. The Rockley Group authors go on to discuss collaborative authoring being a requirement in a DITA-based unified content strategy, and the new and modified roles (content coordinator, information architect, and DITA technologist are all new roles) when working in DITA. The explanations are very complete, offering not just information about the basic job titles, but also the skills and knowledge required.

The two books predictably introduce DITA concepts for new users, such as topic types (task, concept, and reference—the basic building blocks of output), as well as DITA maps, the mechanism for putting the topics together. Where the books differ is their approach to presenting the material: *DITA 101* uses easily understandable cooking recipes and includes figures, which are screenshots taken from FrameMaker. *Practical DITA* is very "hands on": It is assumed that the DITA Open Toolkit (essentially a publishing tool) is already installed and you're ready to begin walking through actual procedures. No sample project files are provided.

A notable difference between the two books is how they discuss tools. In the "DITA and Technology" section of *DITA 101*, the authors are up front in stating that they are going to provide only a "top-level understanding of the kind of functionality to look for" (p. 73). They do a thorough job of distinguishing between authoring tools (also called editors), component content management systems (also called content and translation management systems), and publishing tools (the publishing engines that fully support DITA). It is up to you to investigate the tools on your own. *Practical DITA*'s only mention of tools is in a "Useful Tools"

section, but is limited to a short alphabetical listing of the editing tools available; there is no coverage of the other two main categories mentioned above.

If you read *Practical DITA* and do attempt to work through the procedures, a resource for first installing and working with the DITA Open Toolkit is going to be absolutely essential. I recommend Anna van Raaphorst and Richard H. (Dick) Johnson's *DITA Open Toolkit User Guide* (VR Communications, 2006).

When it comes to making a decision about reading either of the books in this review, strongly consider your purpose for learning about DITA and how you work with new technologies. *DITA 101* is definitely going to be useful to the author or manager completely new to DITA who is looking for a fairly short book to read without touching a computer. *Practical DITA* is for the person who likes to learn from doing and is not hesitant to start a sample project.

David Kowalsky

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On the Way to the Web: The Secret History of the Internet and Its Founders

If you're a history buff with a penchant for computing history, this is a book you'll enjoy. Michael Banks weaves the stories of lesser-known events and companies with the inventions and ideas that led to the Web we know today.

Bill Gates and Steve Jobs have household recognition, but few people may know J. C. R. Licklider, a director at the Advanced Research Projects Agency (ARPA) who conceived the idea for

a "Galactic Network," or Bill Louden, founder of the GEnie online service.

While the personalities behind the businesses make for interesting reading, Banks focuses perhaps too much on Bill von Meister, a player "from a wealthy family tinged with royalty" (p. 25) who had great ideas but never followed through to any success yet still managed to get investors to hand him money. Other actors covered in the book include the CEOs and executives who ran the businesses (like Steve Case of AOL) and, infrequently, the developers and engineers. Nice surprises are references to users, subscribers, and others who pushed service providers to change menu structures or access to key content, showing that often the consumer was right.

In addition to people, Banks includes a general history of computing. Remember getting your first TRS-80 from Radio Shack? Or that Apple II? And if you were online back then using BIX, DELPHI, Prodigy, or The Source, you might feel some nostalgia at the screenshots of old login screens and menu systems. All of this is interesting to the history buff and those prone to reminiscence, but the book promises a "secret history," a hook that may fall short for some because many of the tales are likely forgotten ones rather than secret ones. Still, they hold interest today: After Bill Louden gave $50,000 to an advertising company that failed to come up with a name for his new venture, his wife helped him choose GEnie by looking through the dictionary for words beginning with "GE."

What might appear secret are foreign products that gave the public access to information as does today's Internet. The French, for example, had a text-based system for shopping, news, and train schedules that started in the mid-1970s and expanded quickly because the French government gave terminals to its citizens. Meanwhile, American companies struggled to come up with any single service that consumers wanted. Banks discusses some of these struggles and how local systems gained popularity but were never expanded nationwide or failed because users couldn't use e-mail to cross from Prodigy to CompuServe, for example. Another "secret" is that digital music downloads were explored as a business venture decades ago. Stories abound of cutting-edge technology that just didn't make it the first time around. Along with a fairly linear narrative, the book

offers an appendix with a simplified history of major events.

The book does have some flaws, most notably the need for a thorough proofreading. If you can overlook the occasional typo, this book gives you a narrative of the founding events in computing history up to the early 1990s.

Kelly A. Harrison

Kelly A. Harrison works as a consultant, speaker, and writing instructor in San Jose, CA. For more than 15 years, she's written technical materials and online content for various software companies. Currently, she teaches writing at San Jose State University and prefers short-term and part-time contracts.

The Complete Idiot's Guide to Graphic Design

Marjorie Crum and Marcia Layton Turner. 2008. New York, NY: Alpha Press. [ISBN 978-1-59257-806-1. 303 pages, including index. US$24.95 (softcover).]
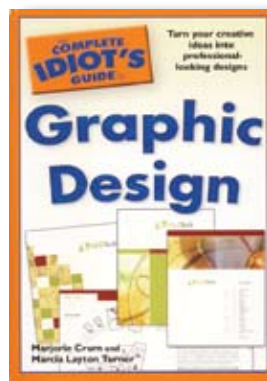
In their reader's note on the inside front cover, Marjorie Crum and Marcia Layton Turner say that anyone who purchases *The Complete Idiot's Guide to Graphic Design* is no idiot because if you know what you don't know, you are smarter than many folks. If you know that you don't know much about graphic design, this book would be a great choice for your library.

The authors have written a six-part book that covers graphic design basics—from type to color, pictures, and templates and grids—to a nicely presented "Putting It All Together" section that is 90 pages long. The text is easy to read and understandable, making the book a pleasure to read. The information is detailed enough to be helpful and, if you want to know more, you can check the six-page glossary before deciding if you need a heftier tome about graphic design. If you are pressed for time, start at the end of a chapter and read "The Least You Need to Know," a nice summary of the key points on the preceding pages.

Chapter 7 is a mere eight pages long. But Crum and Turner give you here a brief explanation of what is meant by "visual hierarchy," explain the rule of thirds and how to take advantage of the sweet spots this rule provides, and offer two examples (typography and images) of how to create visual hierarchy. Also shown in the eight pages are the rule-of-thirds grid, front covers from vintage dime novels that illustrate hierarchy in type, and examples of contrast and pull quotes that demonstrate emphasis.

The book has wonderful illustrations that drive home the information. The page layout is easy to read and flexible enough to allow for the illustrations, shadow-boxed definitions, reversed-out tips and captions, and very helpful color-tabbed page numbers that make it easy to determine your current section.

If you face handling a design project or want to better understand the wherefores and the whys of design, this volume is an excellent choice. You'll find yourself reaching for it for a quick check of the basics. It's an excellent value for the non-designers among us.

Ginny Hudak-David
Ginny Hudak-David is the associate director in the Office for University Relations, the communications unit of the three-campus University of Illinois system.

Practising Science Communication in the Information Age: Theorising Professional Practices

Richard Holliman, Jeff Thomas, Sam Smidt, Eileen Scanlon, and Elizabeth Whitelegg, eds. 2009. Oxford, UK: Oxford University Press. [ISBN 978-0-19-955267-2. 264 pages, including index. US$ 40.00 (softcover).]

If you are involved in the practice or teaching of science communication or have a general interest in the topics of science communication and research, this book will be an interesting and valuable read for you. In particular, if you edit a scientific communication journal, teach in science communication or education, do science research, or are generally interested in related topics, you will find the book worthwhile.

In addition to the chapters, the book has valuable features that many readers will appreciate: a list of abbreviations, a thorough index, and thoughtful closing notes.

The sections of the book include "Communicating Post-academic Science," "Developing Trends in Scientists' Communicating," "Accessing Contemporary Science," "Consensus and Controversy," "Popularizing Science," and "Practicing Public Engagement." These sections offer an interesting scope of topics and a lot to grasp.

Ethical codes, scientific norms, the role of communication in maintaining the social contract for science, patents, and the dissemination of scientific knowledge are discussed in the section on communicating post-academic science. One idea I find of particular note is that post-academic communication is becoming more and more important in part because of a cultural evolution by which "science nowadays is more influenced than hitherto by commercial, political and social forces" (p. xvi).

Two papers focus on communication issues in interdisciplinary or multidisciplinary scientific study, in contrast to communication in a more traditional way through scientific journals with a specific audience in a specific discipline. Blogs and wikis on such subject matter as nanotechnology are examples of new communication channels that encourage dialogue.

Peer review in science journals is a critically important topic in the field and society in general. Elizabeth Wager addresses the authentication of scientific findings in her discussion of past, present, and future techniques of peer review.

Jeff Thomas looks at the controversial issues of genetically modified (GM) food and cloning. Of special interest in his analysis of what happened in the U.K. debate about GM food. Arguments against GM food were "better articulated and received than counter arguments of the pro-GM scientists" (p. 135). You will probably ask just what the role of scientists should be in this discussion. I believe that an attempt to answer the question can raise even more questions.

Two chapters offer interesting perspectives on the popularization of science. Jon Turney wrestles with "the novel as an aid to exploring the meaning of science"

(p. 175). Michael Redfern writes excitingly of audio offerings "that are both difficult and exciting to make and stimulating, informative and sometimes surprising to listen to" (p. 190). You might find this discussion especially enjoyable if you follow such radio shows as *Science Friday*, on National Public Radio in the United States.

The contributors are major leaders and thinkers in scientific communication. Richard Holliman, for example, is a senior lecturer in science communication at the Open University. Eileen Scanlon is a professor of educational technology at the Open University and author of books on communicating science and science learning. Elizabeth Wager, who was head of international medical publications for Glaxo-Wellcome, is a member of the editorial board of *The Medscape Journal of Medicine*.

They provide an often fascinating take on carefully chosen issues facing today's science communication teachers, practitioners, and researchers. The eclectic mix of topics is diverse, ranging from science wikis and blogs to peer review, nanotechnology, nontraditional communication formats, audio, science information in fiction, and controversial topics such as cloning and GM food.

What is not to like in that list?

Jeanette P. Evans
Jeanette P. Evans holds an MS in technical communication management from Mercer University. She has more than 20 years in the field and has published in *Intercom*. She has also presented at several STC conferences. An STC associate fellow, Jeanette is active in the Northeast Ohio chapter.

The Language of Things: Understanding the World of Desirable Objects

Deyan Sudjic. 2009. New York, NY: W. W. Norton & Company. [ISBN 978-0-393-07081-1. 208 pages, including index. US$24.95.]

Design is, among other things, a story, a solution, a code, and a window: a story told by the designer, a solution to a functional problem, a code to be deciphered, and a window through which to see and understand the modern world. These metaphors serve as the justification for Deyan Sudjic's historical survey and close analysis of design in *The Language of Things: Understanding the World of Desirable Objects*.

Firmly convinced that examination of design will reveal the emotional values of a culture, the author explains how design is sometimes constructed to seduce us. Objects are designed to make us feel better about ourselves simply by acquiring them. "Never have more of us had more possessions than we do now, even as we make less and less use of them," states Sudjic.

With at least one quotable statement on virtually every page, *The Language of Things* is an immensely readable, fun, and fascinating exploration of the role of design by a gifted storyteller and acerbic critic with impressive credentials. Deyan Sudjic is director of the Design Museum, London, as well as an art professor and former editor of the international design magazine *Domas*.

Of interest to technical communication professionals in particular is the first chapter, on language, which discusses the power wielded by typeface. Sudjic explains how the use of U.S. interstate signage typeface in a dramatically different context, such as newspaper headlines, seems to shout.

The chapter on archetypes explores how the visual language of design communicates the function of an object and tells the reader how to make it work. An object successfully designed will not need an extensive instruction manual. Furthermore, asserts Sudjic, any object that requires a lengthy instruction manual will never become an archetype.

The suggestive language of color is evident in the Tizio lamp, where black coloring from top to bottom denotes seriousness, with just two spots of red, on the switch and the swivel, to evoke the color combination of the Walther PPK automatic pistol, claims the author.

Sudjic analyzes another archetype, the banknote, in terms of its font and image. For example, the U.S. dollar achieves credibility, he says, because it looks like it was difficult and complicated to produce, with painstakingly engraved images.

In other chapters Sudjic examines the role of design in making objects sufficiently extraordinary to qualify as luxury, argues that fashion's strong contemporary influence derives from its grasp of popular culture, and notes the interdependence of art and design, even though art is valued above design. Ultimately, good design must be useful, whereas art is appreciated for its lack of utility, he explains.

Like art, this book lacks practical utility. There are no bullet lists of directions, guidelines, or warnings. Nonetheless, the book achieves value and credibility. Beautifully designed using heavy satin-finish paper and offering fine photographs on 58 of its pages, *The Language of Things* offers witty social criticism along with insightful exploration of the origins, inspiration, and impact of design.

Nancy MacKenzie
Nancy MacKenzie is a professor in the Technical Communication Program at Minnesota State University, Mankato. She is a senior member of STC.

Writing for Educators: Personal Essays and Practical Advice

Karen Bromley, ed. 2009. Charlotte, NC: Information Age Publishing, Inc. [ISBN 978-1-60752-103-7. 245 pages, including index and author bios. US$39.99 (softcover).]
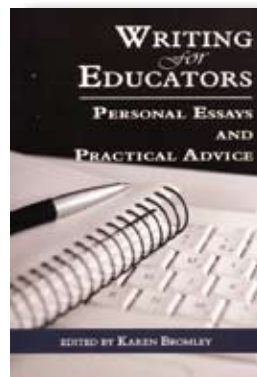
Experienced professionals can and should share their expertise by writing about it.

That's the central theme of these collected essays, edited by professor and writing researcher Karen Bromley. While the book's 21 contributors have targeted teachers, principals, doctoral students, and educational administrators "who want to write more clearly and have their work published" (p. ix), the essays can be very useful to technical communicators as well. Whether you're thinking about publishing for the first time or would like simply to improve your writing practices, you're likely to find worthwhile advice in this collection.

Bromley has grouped the book's chapters into sections that reflect the chronology of a successful writing project. Publication begins with figuring out what you want to say and finding the motivation to get started. If you're required to write articles or books as part of your job, then your motivation is a given.

But if writing is optional for you—a professional activity you've considered but haven't yet started—then the opening essays may inspire you to begin. Here, contributor Chris Pescatore recommends journaling as a source of ideas, insight, and growth. Maureen Boyd suggests that you'll be more productive when you take time to reflect and clarify ideas for yourself before beginning a project. The most important message from this section: Others can learn from you. Your experience is worth sharing.

Next are the challenges of getting ideas down on paper (or screen), shaping the piece, and maintaining a consistent writing schedule. For me, the essays in the second section are especially helpful because they address problems of fitting writing into days filled with other responsibilities.

From Marilyn Tallerico's chapter, for example, I've learned some solid strategies for time management I haven't read elsewhere. I also appreciate Beverly Rainforth's discussion of ways to develop a personal corpus or connected body of work, an approach particularly relevant in academic writing. Several essays in this section offer advice on learning about audiences, such as the suggestion from contributor Joan Koster to read all issues of a target publication for the past three or four years to get a strong sense of its style and scope.

Although the review process that begins once you've submitted a manuscript for publication can be stressful, it can also be a valuable learning experience. A manuscript may receive one of four responses from an editor: accept, reject, accept with minor revisions, or revise and resubmit. In the book's third section, Jenny Gordon explains how to interpret reviewers' comments at each level, while Mitchell Rosenwald offers specific tips for revising. Heather Sheridan-Thomas emphasizes the importance of finding the right venue, since a topic or methodology inappropriate for one publication may be very acceptable for another.

While acknowledging that criticism stings, the essays in this section can help you maintain perspective on writing as a means of personal and professional growth.

Finally, if you have the opportunity at work or in community organizations to write grants or do other types of administrative writing, the closing essays in *Writing for Educators* provide sound strategies for identifying funding sources, collaborating with colleagues, and writing strong applications.

Writing for Educators is easy to navigate. As a writer who looks for forecasts and advance organizers, I like the collection's section openings, each of which includes a one-sentence statement of that section's purpose, a short summary of the essays in the section, and each author's name, title, and institutional affiliation. Appendixes contain supplemental information especially for beginning writers, such as quotations and writing prompts, rubrics and templates for reviewers' comments, and selected bibliographies on writing.

The collection is also readable, accessible, and jargon free. Most of the contributors write in the first person and address the reader directly. The essays are generally no more than ten pages long, but they incorporate many real-world writing experiences. If I could change one thing about the book, I would revise the title, which suggests to me a too-narrow focus

on audiences of teachers and school administrators. Although all the contributors are university or high school faculty or other education professionals, writers in many fields can learn from their comments.

In my favorite image from *Writing for Educators*, Holly Hansen-Thomas compares a lengthy writing project to the task of eating a dinosaur. The secret, she says, is to approach it one bite at a time! These interesting, practical essays provide good reasons to take a seat at the table.

Lyn Gattis

Lyn Gattis is assistant professor of professional writing at Missouri State University (MSU). She teaches beginning and advanced undergraduate courses in technical writing and graduate-level document design. Her research interests include document design, content management, project management, and history of technology. She is a member of the MSU chapter of STC.

Writing Public Policy: A Practical Guide to Communication in the Policy Making Process
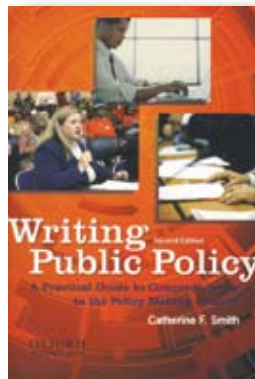
Catherine Smith's *Writing Public Policy* is a practical manual that describes the communication process in policy making and advises you on how to participate in public discourse to initiate social change. Smith, a professor of professional communication and a government communications consultant, uses a pragmatic approach that makes *Writing Public Policy* suitable for a wide audience ranging from students in professional communication and public policy to entry-level professionals working on public policy issues and even citizen activists. Strengths of the book include a slight overhaul of the first version, resulting in updated

cases and scenarios, a clearer layout, and appendixes on policy writing for the Web and on clear writing in general.

The book consists of nine chapters, seven of which are dedicated to particular genres in public policy writing, including policy problem definitions, legislative histories, position papers, petitions and proposals, briefing memos, testimonies, and written public comments. Each of these chapters contains an overview of a specific genre central to policy writing, a case sample, author commentary on the case, and a useful checklist for revising written documents to work more effectively within the related genre.

In comparison with the first edition, the second updates the overall look of the text, making it a much easier read. The book resembles a training manual designed to provide guidelines on how to convey information effectively in various policy-writing genres. The first edition of this physically compact book used a gray background to differentiate the case scenarios from the rest of the text, causing some confusion. The second edition uses a different approach by indenting the case scenarios, creating an easier-to-read style that increases comprehension. Smith takes great caution, however, to warn that although the book is written in a linear fashion, actual policy processes "are not linear" and "they do not always occur in order, or in a single pass, or in a simple way" (p. xii).

The integration of technological themes is evident in the companion instructor Web site and increased discussion of the Internet throughout the book. The Web site provides sample lesson plans, syllabi, and lectures for use in the classroom. Smith also more frequently references the effect that the Web has on public policy.

The focus on the Internet leads to one of the major strengths of the second edition—the appendixes on public policy writing for the Web and writing clearly. As Smith notes, "communicators must now choose how to use the Internet for their purposes" (p. 170). The appendix on policy writing on the Web, for example, explains that policy-related communication should be appropriately tailored to a specific audience in order to communicate a precise purpose, and such writing should be useful and allow the audience to make a decision based on the information provided. An important factor Smith addresses is that "the Internet may hold the most potential for active citizens" (p. 171).

Citizens' increasing use of the Internet for digital activism makes Smith's appendix on clear writing for the Web useful as well. Public policy is often full of jargon and technical language that prohibits people from understanding and acting on a particular policy. For this reason, Smith stresses that you use concise writing to achieve clarity so that "readers easily understand the writer's intended meaning" (p. 183).

Overall, this book is an effective text for students, practitioners, and citizen activists, and the focus on the Web makes it current and applicable in today's public discourse environment.

Joseph A. Dawson
Joseph A. Dawson is a PhD student in technical and professional discourse at East Carolina University and a student member of STC. Professionally, he works as an economic developer and legislative liaison for Pitt County, NC.

Land the Tech Job You Love

Andy Lester. 2009. Raleigh, NC, and Dallas, TX: The Pragmatic Bookshelf. [ISBN 978-1-93435-626-5. 280 pages, including index. US$23.95 (softcover).]

In a down economy, it is even more important for technology workers to take charge of their careers, so the publication of Andy Lester's *Land the Tech Job You Love* is especially timely. This book is a useful guide for people who are looking for a technology job and for people who are currently employed, but in a dissatisfying job.

Land the Tech Job You Love came about because Lester and fellow techie Bill Odom saw that many people were unhappy with their jobs. They also observed highly qualified candidates screwing up their chances for finding a job because of poor decisions in their job searches. Lester contends that everyone should do work that they love, and he provides guidance on how to find and get that job.

Lester divides the book into two main sections: "The job search" and "The interview and beyond." He states that before you can effectively begin your job search, you should evaluate your wants in a job and

understand what you are seeking. He steps you through the process of creating a resume that highlights your best assets and recommends tailoring it for each job to which you are applying. The information is basic enough that it would provide value either to people looking for their first tech job or to experienced workers. Lester provides tips on how to make your resume stand out against others, suggesting that you always provide a cover letter even if it is not a requirement and always prepare a portfolio of past work to bring to interviews. This tends to not be common practice among programmers, but samples of past work demonstrate the skills that you are touting in your resume and can help you to stand out against someone else who is similarly qualified but not as well prepared.

The interview sections are informative to both people interviewing for a job and people interviewing job candidates. Lester advises job seekers to anticipate the kinds of questions an interviewer could ask and contemplate what information the interviewer is looking for in a response. He provides numerous examples of possible interview questions and examples of good answers and bad ones. He stresses that the goal of the interview is to get a job offer, and the best way to accomplish this is to sell yourself and be prepared. Lester also provides tips on what to do when you receive an offer, how to accept or decline it, and how to leave your current job gracefully.

Because the technology field can be a volatile one, it is important that you stay hirable when you have a job. Lester suggests that you constantly work to improve yourself, your network, and your brand. You should be cognizant of your next best opportunity, because you never know when you will need it.

Mary C. Corder
Mary C. Corder is a senior technical writer with F5 Networks, where she writes hardware and command line interface documentation. She edits the Puget Sound STC chapter's newsletter and belongs to Sigma Tau Chi. She received an MA in professional and technical writing from the University of Arkansas at Little Rock.

Indie Publishing: How to Design and Produce Your Own Book
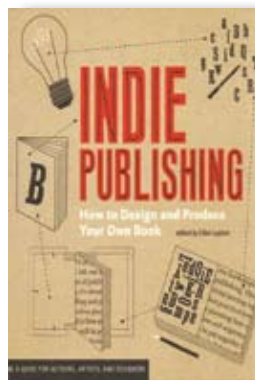
I've made three books in my lifetime: one a collection of my grandmother's poetry, another for my parents' 50th wedding anniversary, and a third for my mother's 80th birthday. And I wish I'd had Ellen Lupton's book before I made them.

Indie Publishing is probably too catchy a title for what this really is. For while it does show a lot of art school and cutting-edge design, it does come at the topic from a very classical grounding in the book arts tradition. As the introduction says, "Our book offers general information about design and production that is relevant to any publishing project as well as case studies of particular types of books that you might want to make and share, from a collection of poems to a children's book or exhibition catalog" (p. 9).

Indie publishing has come into its own because of two factors: (1) the growth of niche publishing, where fewer copies are sold, but to a larger and larger share of the market; and (2) the development of better tools, such as InDesign (and not Microsoft Word, which the book dismisses as a word-processing program that will frustrate you, take a lot of time, and give you poor results).

This book is a visual delight with stunning graphics, especially in its illustrative diagrams. It has particularly good "anatomies," which repay study, including those of the barcode, copyright, bookstore, and book.

The book covers the high end of book publishing, but glories in the low end, and shows everything you ever wanted to know if you want to make your own book. And the idea behind all of it is that you publish a book "because you care about what you have to say, because you have people you want to say it to, and because you take pleasure in making things happen" (p. 13).

If I were to criticize anything about this volume, it would be that the section on typography—a mere six

pages—is much too weak. It seems like typography is by far the most important design part of a book and merits more attention than Lupton gives it. But she does include many good typographical references in the bibliography.

If you love books and have ever thought about making one, *Indie Publishing* will give you both the knowledge and the encouragement to do it.
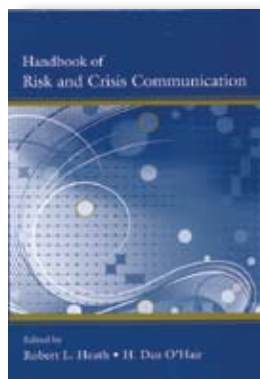
Charles R. Crawley
Charles R. Crawley is a lead technical writer at Rockwell Collins in Cedar Rapids, IA. He also teaches as an adjunct at Mount Mercy College in Cedar Rapids.

Handbook of Risk and Crisis Communication

Robert L. Heath and H. Dan O'Hair, eds. 2009. New York, NY: Routledge. [ISBN 978-0-8058-5777-1. 683 pages, including index. US$225.00.]

Risk is a fact of life and, if we're unfortunate, becomes manifest as crisis. For those who must communicate risk to avert crises, or communicate solutions when risk becomes crisis, the *Handbook* "explores the scope and purpose of risk, and its counterpart, crisis, to facilitate the understanding of these issues from conceptual and strategic perspectives" (p. i). It accomplishes this through 33 diverse, often fascinating chapters.

Risk is a subtle concept, poorly understood even by experts, and ranges from the trivial (which product to purchase) to the intensely personal (relationships) and thence to the inconceivably large (global warming). Indeed, averting, mitigating, and recovering from crisis may be one reason human society evolved. Risk perception is an intensely human thing, therefore subjective and socially constructed, and this creates significant communication challenges.

Ortwin Renn concisely captures the book's message: "The ultimate goal of risk communication is to assist stakeholders and the public at large in understanding the rationale of a risk-based decision, and to arrive at a balanced judgment that reflects the factual evidence about the matter at hand in relation to the interests and values of those making this judgment" (p. 80). This exemplifies a sea change in communication theory, from an antiquated approach in which communication flows in only one direction (from expert to audience) to a nuanced modern approach based on dialogue and negotiated consensus. The devil's in the details, and the book explores those details deeply, rigorously, and insightfully.

Chapters range from straightforward, easily understood advice to rigorously reasoned but often nearly impenetrable theoretical jargon. For practitioners, Vincent Covello's chapter is a gem that extensively, clearly, and pragmatically describes modern risk communication best practices. At the other extreme, Kevin Ayotte, Daniel Rex Bernard, and H. Dan O'Hair provide a turgid and forbidding description of the epistemology and rhetoric of risk that practitioners will be tempted to skip, thereby missing one of the book's hidden gems. It's not easy reading, but it repays *close* reading.

Though expansive in scope, the book has a significant omission: how an organization's internal politics, hierarchy, and communication structures affect both perceptions of risk within the organization and its efforts to prevent, respond to, or recover from risks. Despite introductions to the main sections, there's also no attempt to present a final summary or synthesis. This is disappointing, but not a severe flaw in a book designed to comprehensively survey the state of the art in risk communication research. This omission detracts from the book's value, since readers will have to work harder to create their own synthesis than were the book designed to lead them, step by step, to a holistic understanding of solutions to the challenges of risk communication.

The book is pricey (US$225), but not because of attention to detail. The type is uncomfortably small for my aging eyes, and the copyediting and proofreading are frequently shoddy, with missing punctuation, copy/paste errors, phrases that take two or more reads to comprehend ("is largely irrelevant the explanation of it apparent dangerousness" [p. 64]), and occasional gross infelicities (misattributing Hamlet's "To be or not to be" speech to *As You Like It*). These occur on nearly every page of many chapters, though most chapters

were tolerably well proofread. Combine this with overly academic prose, and many chapters are unnecessarily difficult to read and comprehend. The editors' content selection is much stronger, with a high quality of thought expressed in almost all chapters, though stronger developmental editing would have improved the quality by reducing the length; as a crude estimate, the book could have been shortened by 20% simply by eliminating redundancies and tightening verbose prose. The book would also have been more effective if the chapters had been developed as parts of an integrated whole rather than as separate contributions on a range of topics, but perhaps that's an unfair criticism for a book that wasn't designed as a self-contained monograph.

These caveats notwithstanding, the book is a strong and important contribution to the field of risk communication and contains copious literature citations for those who want to read further.

Geoff Hart
Geoff Hart is an STC fellow and editor who is pleased to spend more of his time counseling his clients on how to reduce risk and avoid crises than on dealing with the consequences.

Web Copy That Sells: The Revolutionary Formula for Creating Killer Copy That Grabs Their Attention and Compels Them to Buy

Maria Veloso. 2009. 2nd ed. New York, NY: AMACOM. [ISBN 978-0-8144-1304-3. 314 pages, including index. US$21.95 (softcover).]
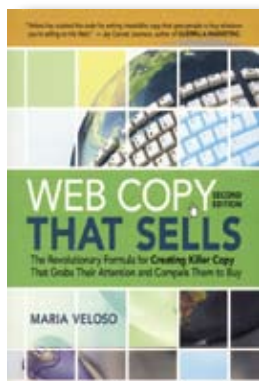
At first glance, you might think that Maria Veloso's *Web Copy That Sells* doesn't make the list of books that should be reviewed in *Technical Communication*. Technical communicators, you might argue, write to inform, not to sell or persuade.

When you read the book, however, you'll see that it is helpful and constructive, even if you don't write to sell products or services.

Writing to sell, like technical writing, is a skill that can be learned. Both genres have their respective conventions, and when you learn those conventions and implement them into your writing, the quality of what you're writing improves. Writing to sell on the Web, Veloso writes, comprises these guidelines:

- Don't make your Web site look like an ad.
- Stop readers dead in their tracks.
- Capture e-mail addresses.

Effective copywriting for the Web is one thing, but how does one measure the sales effectiveness of a Web site? Veloso provides a mathematical formula by which you can evaluate your site and grade it, with a possible score of 100. If you're designing a Web site (perhaps a "Renew your STC membership" page), the criteria provide useful guidance for writing the copy. She reproduces the formula on her Web site at http://www.webcopywritinguniversity.com/formula.htm.

Writing copy to sell a product or service—or persuade someone to take a particular action—isn't limited to Web sites. Veloso writes that e-mail is, in some respects, an even more important tool, in part because it provides greater visibility for Internet marketers, and it is a better tool for gathering and distributing information.

To paraphrase a cliché, the beauty of most genres of writing is in the eyes of the reader. By contrast, when one writes to sell, one can objectively measure the effectiveness of the writing by the response to the offer. Veloso, director of Web Copywriting University, has written a book that helps you develop the ability to write to sell. If you're interested in learning this skill, you'll want to refer to this book repeatedly.

George Slaughter
George Slaughter is a senior technical writer with The Integrity Group. He is a senior member of STC and a past Houston chapter president.

Green Graphic Design

Brian Dougherty, with Celery Design Collaborative. 2008. New York, NY: Allworth Press. [ISBN 978-1-58115-511-2. 203 pages, including appendix. US$24.95 (softcover).]

Green Graphic Design promotes the idea that green approaches to graphic design are more than simply trendy—green graphic design can model and inspire practices that respect and preserve Earth's finite resources.

STC members may remember the award-winning article on environmentally responsible printing by Roger Munger (my colleague at Boise State University) in *Technical Communication* 55.1 (February 2008). Munger describes the environmental impacts associated with numerous types of papers and inks, provides information about the staggering amount of paper used in typical office settings, and recommends practices that technical communicators can adopt on the job.

While Dougherty's book also provides paper and ink recommendations, it provides a broad range of examples of green design: from perforated letterhead that folds into a self-mailer, to containers both composed of recycled materials and designed to eliminate wasted space. The book itself embodies green design—printed with vegetable inks on recycled paper that was made at a plant powered by renewable energy. Dougherty founded Celery Design Collaborative in the late 1990s to specialize in green design. The book reflects the firm's collective experience and wisdom.

The text is written in an accessible, conversational style. Chapter 2, "Design is an Avocado," explains Dougherty's three-part, outward-to-inward view of a designer's role: "designer as manipulator of stuff; designer as message maker; and designer as agent of change" (p. 8). While the first two parts are second nature to many of us, the third part transforms the designer's typical role. Dougherty's passion for this change infuses the book.

Dougherty believes that sustainability is the concept that will define our era, and he argues that the value of a design project should not be measured solely in its financial cost. He encourages designers to work both "upstream" (with business strategy and marketing) and "downstream" (with materials, manufacturing, and distribution) to find innovative green design solutions.

Chapter 7, the longest, promotes the concept of "designing backwards"—starting at a piece's ultimate destination and working backward to the design studio. Designers can take steps along each part of the journey to add value, encourage efficiency, and choose materials with the least environmental impact.

Dougherty discusses where printed consumer materials end up, how objects elicit responses from readers or users, how packaging can be designed efficiently, and how choices in the printing process can have environmental benefits. A set of recommendations for small, medium, and large print runs is helpful, and a case history detailing changes in the design, printing, and distribution of a particular report for Hewlett-Packard over several years shows green design put into practice.

The final chapters again advocate that designers should embody and effect change through their work. The appendix provides a glossary and a "sustainability scorecard" for printing materials, lists vendors for recycled papers, and identifies inks containing potentially hazardous metals.

Dougherty's book is part sourcebook of ideas, part handbook for reference, and part essays on design. With numerous examples and many guidelines, *Green Graphic Design* will help graphic designers make choices that reflect principles of environmental sustainability.

Russell Willerton
Russell Willerton is a senior member of the Snake River chapter and teaches at Boise State University.

Introduction to Web 2.0

Alan Evans and Diane Coyle. 2010. Boston, MA: Prentice Hall. [ISBN 978-0-13-507403-9. 289 pages, including index. US$66.67.]
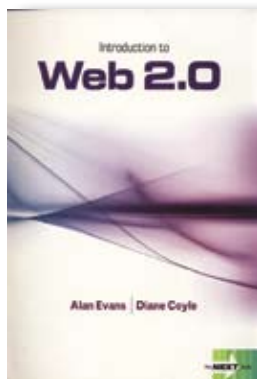
As soon as I saw *Introduction to Web 2.0*, I wanted to use it to teach a class—but first I needed to actually work through some of the exercises to learn the material itself. The text is engaging, with headings like "What Exactly Was Web 1.0 (and How Did I Miss It)?" (p. 2). Its visual walkthrough approach describes the concepts and also deals with those annoying gaps so common in writing about new media, things that many authors skip over as being common knowledge, but that anyone just starting out really needs to know.

Introduction to Web 2.0 is a teaching and learning tool that is designed for use in a classroom setting, but individual learners can certainly benefit. The chapters are "Introduction to Blogging," "Podcasting," "Enhancing Blogs," "Wikis," and "Social Networking." Each chapter includes a set of several objectives for the learner, a summary, key terms, exercises, and assessments. The hands-on exercises, neatly summarized in a table at the start of each chapter, guide you through practicing the skills covered in the objectives.

In addition to the printed textbook, an Instructor Resource CD, available to teachers adopting the book, offers PowerPoint presentations, tests, an instructor's manual, and solution files for the exercises. Students have access to a companion Web site with student data files, objectives, a glossary, a summary of each chapter, and an online study guide.

Each chapter quickly engages you in hands-on exercises that give a sense of involvement and accomplishment. The text is friendly, but not chatty. The authors get right to the point and maintain the focus.

Copious illustrations, screen captures, annotations, and formatting provide visual aids. Exercises are printed on a green background so you can easily find and differentiate them from the body text. The visuals are well annotated, and the procedures are clear and show results of each step. The exercises are quite structured: If you follow the procedures, you'll succeed. The text encourages you to experiment *after* you have accomplished the basic skill and also provides instructions about correcting mistakes.

After the chapter summary, each chapter includes assessment exercises, additional practice exercises, discussion questions, and suggestions for team projects that explore aspects of the tools and techniques covered in that chapter. The solutions to the exercises, however, are only on the CD, not in the book. The extensive index makes it easy to find information throughout the book. My one complaint focuses on the durability of the lie-flat spiral binding and card-stock cover. Given that this is a tutorial—not a reference book—that might not be an issue.

This textbook is suitable for anyone who wants to learn how to participate in the wonderful world of Web 2.0 but who has no idea where to begin. All learners can use this text to plunge right into Web 2.0, from the blogosphere through social networking—and have a lot of fun in the process.

Marguerite Krupp
Marguerite Krupp is an STC fellow, an adjunct professor at Northeastern University, and a technical writer with more than four decades of experience in the computer industry. She is a frequent presenter at conferences, an accomplished photographer and playwright, and the author of several general-interest freelance pieces.

Freelancing 101: Launching Your Editorial Business

Ruth E. Thaler-Carter. 2009. New York, NY: Editorial Freelancers Association. [ISBN 978-1-880407-29-5. 44 pages. US$8.75 (softcover)].

If you have ever thought of striking out on your own as a freelancer, *Freelancing 101* is an easy and quick read, but it is also a book that you will return to and pore over its details time and again. The combination of Thaler-Carter's honesty and her obvious veteran and expert

status as a freelancer makes this booklet a motivating and valuable reference.

From the start, Thaler-Carter is up front about the advantages of freelancing, which make your heart beat fast and your mind race with the possibilities of a freelance life, but she is also quite candid about the pitfalls that you may find yourself in if you do not think through the prospect of working for yourself carefully. She goes even further in the chapter "Danger Zones" to bring to light issues of utmost concern, such as having to pay for your own insurance, how taxes affect the freelancer, and time management—an issue that many think they have a handle on but find out quickly that they do not.

Important and beneficial information you will find in *Freelancing 101* includes URLs for professional and freelance organizations that provide rate information, seminars, and job postings. There is even a template for announcing your new business to local newspapers and other publications. In "Finding Assignments," you are reminded how easy it is to "become so immersed in a current job or project that you forget to line up a new one for the when the current one ends" (p. 24). To keep a steady stream of jobs coming in, Thaler-Carter suggests spending one day a week marketing yourself, and she provides strategies for how to spend that day. Even more helpful is the advice about what constitutes a reasonable request by prospective clients to test your skills and abilities.

With an author so obviously experienced and successful in this area, it is difficult to disagree with much of what she has to say, but there are two points that strike me as odd. One is her suggestion to make "friends with an attorney so you have someone to consult over any possible issues" (p. 14). This statement is understandable but comes across probably in a way she didn't intend, where one would make friends with another professional simply for what they can provide later on. The other point is that there is an inconsistent message about whether or not a freelancer needs a Web site. In the early part of the book, it is suggested that a Web site may be needed, but that it can wait; however, later in the book, a Web site is listed as one of four essentials for promoting yourself.

Aside from those two minor disagreements, I find *Freelancing 101* an inspiring, motivating, and practical resource that anyone with freelancing aspirations most definitely should read.

Diane Martinez
Diane Martinez is a writing specialist for Kaplan University's online Writing Center and a PhD student at Utah State University. Her technical writing experience has been mostly in higher education, engineering, and government contracting. She has been with Kaplan since 2004 and a member of STC since 2005.

Risk Communication: A Handbook for Communicating Environmental, Safety, and Health Risks
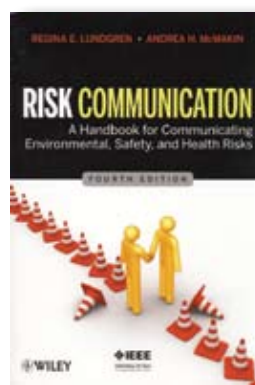
The fourth edition of *Risk Communication* is an excellent introduction to risk communication for practitioners and students alike. The book's five sections lead you through the process of understanding, planning, implementing, and evaluating risk communication, as well as highlighting special risk communication situations.

Risk Communication's main strengths continue to be its inclusion of varied communication strategies that work in different risk situations as well as theoretical and practical information in each chapter. The book also discusses the ways in which risk communication practitioners can work with different audiences, including stakeholders and the media. For example, strategies that meet the needs of these very different audiences can be developed using a helpful chart in the chapter "Analyze Your Audience" that outlines audience characteristics and concerns. This edition adds to the strengths of earlier editions by focusing on new developments in risk communication research and practice, such as social media and international risk communication.

Lundgren and McMakin also address a key weakness from the third edition of the handbook. In that edition, resource lists at the end of each chapter

included citations from the early 1980s and 1990s. In the fourth edition, resource lists reflect more recent research, although earlier foundational texts that provide overviews of risk communication are still included.

One of the major updates for this edition is the authors' treatment of social media. They caution that you will need to invest significant time and resources to maintain a significant social media presence and that you may lose a measure of control over the risk communication message. This advice is particularly helpful if you are an experienced risk communicator who is considering making the leap from traditional media into blogging or a social network site like Facebook. The authors also provide several successful examples of risk communicators' using social media, supplementing these examples with additional ideas for implementing these technologies in different situations. You can easily see how these examples could be adapted for your own organization's needs.

Another new section focuses on international risk communication. Reminding readers that risks may start in one location and quickly spread to others, the authors emphasize how important knowledge of cultural differences can be when communicating about risks. They also acknowledge that learning from similar risk situations in other countries can benefit risk communicators. Despite the importance of this topic, the authors devote only a few short pages to it. This chapter, unlike the majority of the book, features little practical information for practitioners. For a better and more hands-on understanding of international or intercultural communication, you will have to explore other resources. Although this particular section has limitations, its very inclusion shows that members of the risk communication field are learning from colleagues dealing with similar issues.

Risk Communication remains one of the best resources for risk communicators and students who need a desktop reference or introductory text on the subject.

Ashley Patriarca

Ashley Patriarca is a doctoral candidate in rhetoric and writing at Virginia Tech. She earned her master's in English (technical and professional writing) at the University of North Carolina at Charlotte, where she also worked in the Department of Enrollment Management as a technical writer.

100s Visual Ideas: Color Combinations

"Color pervades all forms of visual communication" (p. 7).

If you've ever looked at a printed piece or a Web page and thought that the colors were a terrific combination or, conversely, wondered what possessed the designer to pair those particular shades, you'll love *100s Visual Ideas: Color Combinations*. This book—written by Virginia Commonwealth University faculty member Matt Woolman, printed in China, and published in the U.K.—is a feast for the eyes, a solid reference, and a wonderful showcase for creative and colorful design from around the globe.

Woolman divides the book into two parts: informational reference and visual reference. The former takes up approximately 40 pages and offers essential definitions and explanations of color theory, including subtractive and additive color, the color wheel, the mechanics of specifying color (for example, RGB or CMYK), and relationships.

Each page is a visual delight. For example, in the color palette section, Woolman presents the color wheel untraditionally: rather than the usual pie chart, his wheel, shown on the verso, contains spokes that have maple leaves midway and at the end of each spoke and one leaf at the center. On facing pages are six rows, one each for analogous, neutral, complementary, split-complementary, triad, and double-complementary color. The rows list CMYK and RGB values and have four small blocks with the colors illustrating the concept.

The second part of the book is a showcase for examples of beautiful design classified into natural, cultural, and emotional categories. Woolman includes advertisements for a variety of products, including beer, honey, flour, pizza, and toilet paper. Airlines, a boarding school, and a mobile communications company are among the services that are highlighted with arresting and colorful ads. The book demonstrates that certain

color combinations evoke a particular type of response. And a thoughtful design team will capitalize on the reactions.

It's impossible to do justice to the colorful pages. Clean, bright-white stock is a successful platform for the hundreds of colors on display throughout the book. The layout is open with plenty of white space. The type size is fairly small, which is a bit challenging for older eyes. The resources section is an excellent compilation that lists design-focused business organizations, publications including magazines, blogs, and books, an index of the designers whose work is included in the book, and a glossary. A CD with the color palettes shown in the book is included as well.

100s Visual Ideas: Color Combinations is an excellent and informative book and an inspiring resource for design teams.

Ginny Hudak-David

The Tyranny of E-mail: The Four-Thousand-Year Journey to Your Inbox

John Freeman. 2009. New York, NY: Scribner. [ISBN 978-1-4165-7673-0. 244 pages, including index. US$25.00.]
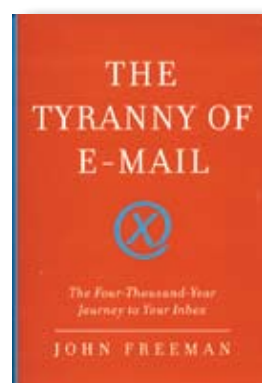
"Of course e-mail is good for many things; that has never been in dispute. But we need to learn to use it far more sparingly, with far less dependency, if we are to gain control of our lives" (p. 192). So writes John Freeman—writer, book critic, and editor of *Granta* magazine—in his critique of e-mail. And really, this book is not just a critique of e-mail, but also of the computer, technology, and, to a lesser extent, capitalism.

Basically, says Freeman, the time we spend on the computer with e-mail is eating away at the time we should be spending with our families and friends or out in common activities such as charitable, civic, or professional groups (read STC). That amounts to about two hours a day, by his estimates. It's not natural and can

never replace face-to-face interaction for the quality of communication. And it has bad consequences: It leads to disinhibition, which means doing stuff online you'd never do in person, and in turns creates a "life without empathy" (p. 156).

His reflections on reading are pertinent for us as writers. In the twenty-first century, writing and "publishing" have become easier than ever, while reading has become harder than ever. After centuries of reading by reflected light, we now read by backlit light, where light is shot directly into the eyes. While Freeman doesn't explain why this is a bad thing, he thinks it is. But our reading is constantly being interrupted. And screen-based reading is changing how people read: "people increasingly tend to leapfrog over long blocks of text. We need bullet points, bold text, short sentences, explanatory subheads, and speedy text. People skim and scan rather than rummage down into the belly of the beast" (p. 177). If you are familiar with the work of Jakob Nielsen, this is nothing new.

The last chapter consists of ten things we can do to fight the tyranny of e-mail. It has many good suggestions, including reading the entirety of an e-mail before responding. Out of the ten, there was only one that gave me pause: Check your e-mail twice a day, but no more. I don't know about your environment, but I'm constantly getting e-mails throughout the day that change my priorities, so I can't afford not to keep it open.

Freeman, unfortunately, cites countless statistics without giving their source and fails to include authors mentioned in text in his selected bibliography. Also, he certainly should include Patricia O'Conner and Stewart Kellerman's fine book of a few years ago, *You Send Me* (Harcourt, 2002; reviewed in the May 2003 issue of *Technical Communication*), as well as the more recent *Send*, by David Shipley and Will Schwalbe (Knopf, 2007; reviewed in the May 2008 issue of *Technical Communication*). While they focus more on the content of our e-mails, they do so in a civilized manner that would help cut down the "viral" nature of e-mail that Freeman so abhors.

Charles R. Crawley

Minimalism: Designing Simplicity

Hartmut Obendorf. 2009. London, UK: Springer. [ISBN 978-1-84882-370-9. 340 pages, including index. US$129.00.]

If you are a designer, an engineer, a student, a researcher, or a teacher who helps prepare those who will work with human-computer interaction (HCI), Hartmut Obendorf's *Minimalism: Designing Simplicity* may be of interest.

Obendorf attempts to clarify understandings and identify tools that support simplicity in design, especially in HCI design. He devotes one section to address each of the following topics:

- What is minimalism?
- What are the characteristics of minimalistic works in different disciplines?
- How do Obendorf's concepts of minimalism relate to contemporary thinking about HCI?
- How does the minimalist perspective inform the reduction in design, and what tools are available for different forms of reduction?
- What are the potential, possible issues, and limitations of minimalism to contribute to aesthetics and design?

Minimalism is introduced in the context of today's increasingly complex society. Obendorf asserts that the proliferation of digital technology that was intended to speed and simplify work has complicated our lives so much that the focus of the design of digital products has shifted from reducing complexity for designers to reducing complexity for users. He claims that these two concerns about simplifying the design and the use of digital products are inextricably linked and must be considered together. Obendorf's work is an effort to discover/develop a system to simplify the design of these products.

He has difficulty precisely and concisely defining *minimalism*. He acknowledges this difficulty and has searched the visual, musical, and literary arts, architecture, and typography for a universal definition and for minimalistic perspectives that can be used to guide and evaluate decisions about the design of digital products. Rather than discovering a universal definition, Obendorf found the use of the term was inconsistent within and across disciplines. However, through his research, he developed a framework of minimalistic perspectives that are central to his design analysis. The framework consists of what Obendorf calls *notions* of minimalism: functional, structural, compositional, and architectural minimalism. He describes these notions, the relationships between them, and their utility.

He examines rules of HCI design and the applicability of each of the four notions of minimalism that constitute his framework for understanding design rules and evaluating designs. The discussion of functional minimalism starts with a comparison of a multipurpose tool (the Swiss army knife) to a set of single-purpose tools (sushi knives) to make the point that functional minimalism means a reduction of functionality, which results in a tool that fulfills its function better than a multipurpose tool and thereby gives the user more satisfaction. Obendorf extends his analysis to the digital world, detailing how in its GarageBand software Apple reduced functionality to meet users' needs and demands. He offers two sobering observations about achieving and sustaining minimal functionality and an accompanying competitive advantage: "the minimal set of functionality not only is difficult to determine and cannot simply be found by reduction alone, but is also subject to changing demands and requirements of the users" (p. 131). The discussion of structural minimalism includes analyses of remote controls, the Palm Pilot and other devices, and the design implications.

The author argues "for systematically adapting or changing the development process to incorporate reduction" (p. 239) and provides strategies including reductions to the design process and the use of personas, scenario techniques, agile methods, and values-based development. For example, he offers the Minimal Design Game, which he describes as "a deliberate counter-design to typical design games trying to call out creativity or lateral thinking in the player…. Playing the game should invite the designers to take a step back… resulting in a design that… follows a consistent vision" (p. 244).

For anyone concerned with the design of digital products, this book can be a valuable training tool and reference.

Wayne L. Schmadeka
Wayne L. Schmadeka is an STC senior member and serves on the faculty in the Professional Writing Program, University of Houston-Downtown. He founded and ran an educational software engineering firm for 12 years, has extensive experience developing varied documentation, and consults with engineering firms to increase the effectiveness and reduce the cost of their documentation.

Survival Guide for Scientists: Writing—Presentation—Email

Ad Lagendijk. 2008. Amsterdam, The Netherlands: Amsterdam University Press. [ISBN 978-90-5356-512-4. 260 pages, including index. US$19.95 (softcover).]
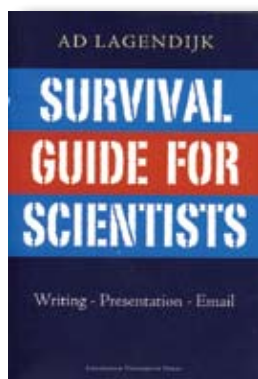
Ad Lagendijk, distinguished university professor at the University of Amsterdam and professor of physics at the University of Twente, addresses communication problems in three areas for students at all levels in the hard sciences as well as junior and senior scientists. He finds problems in their writing, presentations, and e-mails. Because his audience is so broad, he provides broad answers and considers the problems as fundamental regardless of context.

No one would doubt that there are communication problems in every discipline. These communication problems vary from a failure to consider the user to a lack of organization, coherence, and cohesion. The author has had enough of poor communication and presents his personal views as to not only these problems, but also their solutions. He calls his material a tutorial and supports this approach by primarily using second person in all three sections of the book.

This approach could be one of the book's strengths. Unfortunately, it turns into one of the book's major weaknesses. The tone of the book is highly informal, full of colloquialisms and slang. This approach eases the schoolmaster hints that Lagendijk provides; but, it is his attitude that can grate on the reader because he positions himself as knowing what constitutes effective communication in the natural sciences. For example, "Utilizing italic fonts for different purposes, like indicating a brand name, is allowed" (p. 73). By whom? Then there are "Do not be stupid: preparation could not have consisted of a mere editing of your slides of one of your recent seminars"; "If your world is still full of angstroms and inches you probably work in a retirement home"; and "If you behave like an arrogant bastard, you will have a hard time getting the audience on your side" (p. 130).

He stylistically places himself above the reader, providing information to lesser beings in need of his help. And, rather amazingly for a well-published scientist, he names neither sources nor authorities for his hints.

Academics who read this book will find themselves marginalized by his insistence that courses in scientific communication offered by the universities are useless: "In university environments courses are frequently…not given by active, professional researchers…. The opinion of humanists, university lecturers and professors in language are absolutely irrelevant, and invariably an obstacle" (p. 38).

I find this attitude rather odd because the University of Twente has one of the strongest technical communication degree programs in Europe. And that leads to another curious point about this book.

No one seems to have copyedited or even proofread the book before publication. There are literally hundreds of problems in style, grammar, and usage, and especially proofreading. In other circumstances, I would question whether the publisher had used a copyeditor and proofreader. But given the author's attitude, I can imagine that he refused all such help.

Given these problems, then, of what value is the book, and should technical communicators buy it? To begin with, out of hundreds of books that address writing problems in the sciences generally and in specific disciplines, this is the only one that attempts to offer advice in the areas of writing, presentations, and e-mail in one place. A second strength is that the author does have a lot of experience in publishing and presenting at conferences.

Finally, Lagendijk has considerable technical knowledge on how to set up and use computers for not only preparing and editing manuscripts using TeX, but

also preparing and delivering conference presentations, responding to referees, and controlling e-mail.

Other strengths include useful advice about working with a group of authors, especially as a senior or lead author, and how to respond to referee reports.

Therefore, if you can work through the multiple problems of copyediting and proofreading as well as the attitude of the author, you can find information to help you when you are working with scientists as they prepare their papers and presentations. In that case, I would suggest buying a copy. If the obstacles are too great, a copy for the company library might be the best solution. Note: For additional views of this book, see Lagendijk's blog: http://sciencesurvivalblog.com.

Tom Warren
Tom Warren is an STC fellow, a winner of the Jay R. Gould Award for teaching excellence, and professor emeritus of English (technical writing) at Oklahoma State University, where he established the BA, MA, and PhD technical writing programs. Past president of INTECOM, he serves as guest professor at the University of Paderborn, Germany.

Search Engine Optimization: An Hour a Day

Jennifer Grappone and Gradiva Couzin. 2008. 2nd ed. Hoboken, NJ: Sybex. [ISBN 978-0-470-22664-3. 359 pages, including index. US$29.99 (softcover).]
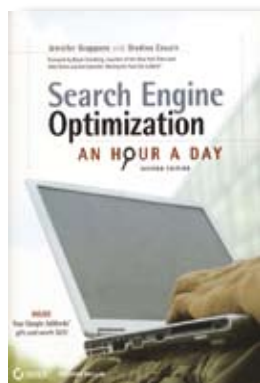
You may want to venture into search engine optimization but find yourself giving excuses like
- I don't have time!
- I'm overwhelmed with the possibilities!
- I don't know where to begin!

If you have uttered these words, Jennifer Grappone and Gradiva Couzin's *Search Engine Optimization: An Hour a Day* is a great book for you. They promise to "walk you through the steps to achieve a targeted, compelling presence on the major search engines" (p. xvii). And that they do.

Grappone and Couzin have broken the large topic of search engine optimization (SEO) into a sensible

approach. They ask you to lay the foundation to your SEO plan, create a strategy, and then actually follow it over a three-month period by devoting an hour a day to your Web site's SEO. While you won't find any smoke and mirrors, tricks, or other such tomfoolery that is oftentimes associated with SEO, you will find what you need to build a case to members of your organization as well as an orientation to the basics that help you understand what SEO is and how it benefits you.

The days of "build a Web site and they will come" are long over, and these authors help reiterate how good site construction and content are important to your site's success. They explain how the search engines work (their Web site at www.yourseoplan.com offers updated information), define the basic truths of SEO, and provide worksheets to help you clarify your goals, determine your audience, and create a custom approach to your SEO activities.

Basics are basics; however, the basics of SEO have expanded since the first edition of this book. In this second edition, you'll find more detailed information and real-life examples about using the Social Web, analytic tools, and specialty searches to your benefit.

With almost half its pages devoted to defining SEO, defining your audience and goals, and establishing buy-in from your team, the book is particularly appealing to novices. The second half breaks the approach into steps that can be performed an hour at a time over a three-month period, making it accessible to businesses of all sorts.

These discrete tasks are just a starting point and can easily encompass more than an hour. The authors acknowledge this and encourage you to progress at your own pace. To counterbalance cumbersome tasks, they provide "Pearls of wisdom" that increase efficiency. For example, "If you're a small organization, stop using the free stats package that comes with your hosting solutions and start using Google Analytics" (p. 149).

Grappone and Couzin effectively provide detailed information about the major search engines in existence at the time of the book's publication. As you would with any book that covers such a dynamic topic, you may find instances where you need to discern how changes in technology apply to your particular endeavor. They provide enough information for you to be able to orient yourself to any search engine offerings easily.

If you employ the tactics provided in this book, not only will you see results, you will equip yourself with the basics of effective search engine optimization.

Louellen S. Coker

Louellen S. Coker has more than 15 years of experience in public relations, instructional design, Web design, technical writing, and editing. With a technical communication MA, she is president of Content Solutions, an STC senior member, and a past Lone Star Community president. She has taught technical communication and presented workshops.

Website Optimization

Andrew B. King. 2008. Sebastopol, CA: O'Reilly. [ISBN 978-0-596-51508-9. 367 pages, including index. US$39.99 (softcover).]
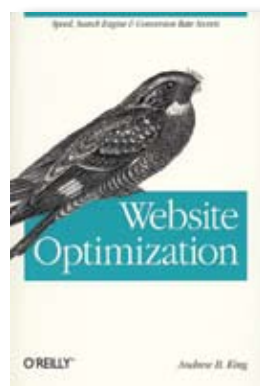
When many people hear the term *Website optimization*, they think of getting their sites to show up in Google's top ten search results, but that's only a small part of the subject. *Website Optimization* is about moving up the list at Google, and more. Andrew B. King wants to help Web marketers, Web developers, and businesspeople get the most out of the time and money they invest in their organizations' online presences. He calls Web site optimization "a discipline of efficiency" (p. xvi), in which success involves a synergy between search engine marketing optimization and Web performance optimization.

King intends his book for both tech-savvy Web developers and marketing people. It is not for complete beginners, however. Readers should have some basic understanding of the relevant issues in their fields, such as HTML and CSS rule syntax for Web developers and search engine management and basic Internet terminology for managers. King defines some terms, such as *deck*, but not others, such as *URI* or *strange attractors*. He introduces the term *nofollow attribute* but doesn't define it until later. Although King doesn't see his audience as including absolutely everybody, the book could be made more usable by a larger audience if there were a glossary to support less knowledgeable readers.

The book's ten chapters are divided into two parts: "Search Engine Marketing Optimization," which covers search engine optimization, pay-per-click advertising, and conversion rate optimization; and "Web Performance Optimization," which covers Web page optimization, CSS optimization, Ajax optimization, advanced Web performance optimization, and Web site optimization metrics. King recommends not reading the book straight through, but rather skimming through it and flagging parts that are of particular interest. Indeed, people working in all but the smallest organizations will likely find that they will be more interested in one half of the book or the other, depending on their job titles.

Website Optimization draws on both research and field practice. It is footnoted throughout with references to industry and professional literature. King gives this practitioner-based tip in the chapter on natural search engine optimization: "Many companies put their company name at the beginning of every page title. A more search-friendly approach is to put your primary keyphrase up front and place your company name at the end of the title" (p. 21). He follows it with an exception from the research literature that applies when "the link appears as a hit on SERPs that are full of junk links, and when your company name is well known and respected" (pp. 21–22). King's experience running a Web performance and search engine marketing firm gives him the perspective to avoid being swept away by every new technological development. Although he includes a chapter on Ajax, he cautions, "As with many web technologies, there is an initial hype phase followed by a pragmatic phrase. Presently, Ajax is still in the tail end of the hype phase," and "over-Ajaxifying something" is possible (p. 218).

King includes lists of best practices and steps readers can follow. There are other lists, as well: the "six persuaders" that get people to say yes, the top ten factors to maximize conversion rates, five ways to deal with multimedia effectively, and nine Web site success metrics, for example. King shows the optimization techniques applied in case studies and quantifies the results.

The book is formatted for ease of use, with frequent headings and bulleted lists. The text is full of graphics: charts, graphs, and screen captures. Icons show tips and cautions, and every chapter ends with a summary. There are passages of computer coding that

serve as examples, and that readers are invited to use on their own Web sites.

Those who have no expertise in either marketing or the nuts and bolts of running a Web site will probably find this book too advanced for them. Those who have the necessary background, however, should find *Website Optimization* a good source of practical information for building their online businesses.

Marilyn R. P. Morgan
Marilyn R. P. Morgan has an MA in English from the University of Tennessee. After serving as a technical writer and editor in academic and government research organizations, she now works as a freelance writer and teaches English at the college level. She has been an STC member since 1993.

The Facebook Era: Tapping Online Social Networks to Build Better Products, Reach New Audiences, and Sell More Stuff

Clara Shih. 2009. Boston, MA: Prentice Hall. [ISBN 978-0-13-715222-3. 236 pages, including index. US$24.99 (softcover).]

Facebook and other social networking platforms, such as LinkedIn and MySpace, foster an immediacy, openness, and opportunity for interactivity in online personal relationships that are unlike the characteristics of connections made through e-mail or other electronic media. New, informal, lower-commitment relationships with casual acquaintances and friends of friends also emerge. *The Facebook Era* is a guide to taking advantage of these varying degrees of connectedness to forge closer relationships with customers and within companies.

Author Clara Shih focuses on how to establish and manage customer relationships by leveraging the social capital, the "collective value of all social networks and the inclinations that arise from these networks to do things for each other" (p. 43), that accumulates from the expanded, interrelated systems of contacts. From searching for keywords in online profiles of prospective clients to transforming "fringe" relationships into interactive partnerships between customer and vendor, businesses have many new possibilities for expanding their customer base through social networking. Companies can target ads based on specifics in the personal profiles of potential customers and capitalize on brand recommendations among friends. Shih explains these processes as well as discussing the benefits of using online networks to recruit new hires and build a more productive workforce through employees' social relationships.

Readers who have not used Facebook will be at a disadvantage when reading *The Facebook Era*. Anyone planning to use Facebook for business should be grounded in the dynamics of social networking, and Shih helps newbies by providing step-by-step instructions for setting up a personal Facebook account. She also goes into the specifics of managing Facebook business pages. *The Facebook Era* ends with a discussion of integrating social networking into an overall corporate strategy. This is the first step a business should take when considering investing its resources in social networking as a business tool. Placing this discussion at the beginning of the book instead of tacking it on at the end would have more effectively emphasized the importance of this concept.

Shih has a vested interest in the expanded use of people-centric platforms such as Facebook. She developed Faceconnector, a utility for connecting Facebook friend information with sales contact information. This book is not a sales pitch for her product, although she refers to the application to illustrate current and future social networking possibilities. *The Facebook Era* is actually a good reference for anyone interested in business applications of Facebook. Even more than that, it is an overview of the "general social networking phenomenon emerging across the Web" (p. 3). Whether or not readers intend to use social networking as a business tool, this book will help them understand what this phenomenon is all about.

Linda M. Davis
Linda M. Davis is an independent communications practitioner in the Los Angeles area. She holds a master's degree in communication management and has specialized in strategic communication planning, publication management, writing, and editing for more than 20 years. Linda is also a member of IABC.

The following articles on technical communication have appeared recently in other journals. The abstracts are prepared by volunteer journal monitors. When the abstracts published with articles are used, they are enclosed in quotation marks. If you would like to contribute, contact Sherry Southard at southards@ecu.edu.

"Recent and Relevant" does not supply copies of cited articles. However, most publishers supply reprints, tear sheets, or copies at nominal cost. Lists of publishers' addresses, covering nearly all the articles we have cited, appear in *Ulrich's International Periodicals Directory*.

Communication

Connections with a purpose

Williams, R., & Williams, T. (2009). *Communication World, 26*(4), 26–29.

The authors stress the importance of communication management in successfully maintaining online communities: "The online community can thrive only if the communication among its members is effective.... Relationships are a prerequisite for an online community to exist.... The optimal role of the communicator is one of a manager building relationships, with communication strategies that achieve a purpose or deal with issues."

Linda M. Davis

Convergence in the rhetorical pattern of directness and indirectness in Chinese and U.S. business letters

Wang, J. (2010). *Journal of Business and Technical Communication, 24*, 91–120.

"This article examines rhetorical patterns in claim letters from two universities, one in China and one in the United States, to see whether these patterns are convergent. A genre-based textual analysis of the claim letters, written by two different cultural groups of participants, found that both groups of letters display a similar rhetorical preference for directness and indirectness. The author explores how local contextual factors have contributed to these groups of participants' preference for similar rhetorical patterns

and calls for the integration of contextual factors in intercultural rhetoric research, practice, and pedagogy."

Kimberly C. Harper

How effective is Google's translation service in search?

Savoy, J., & Dolamic, L. (2009). *Communications of the ACM, 52*(10), 139–143.

"The article presents the results of a study which investigated the effectiveness of Google's translation service for searching the internet using multiple languages. It was found that asking Google to automatically translate search terms reduces search effectiveness. These performance reductions were generally due to the characteristic problems associated with mechanical translation, and varied between language pairs. Using one intermediary language, into which all search terms were translated, and from which all subsequent translations were made, was found to improve the results."

Sherry Southard

Human interaction for high-quality machine translation

Casacuberta, F., Civera, J., Cubel, E., Lagarda, A., LaPalme, G., Macklovitch, E., & Vidal, E. (2009). *Communications of the ACM, 52*(10), 135–138.

"The article discusses the difficulties of automating translation services, and the need for human interaction in order to provide acceptable results. As of 2009, even the best automated translator could not produce publication-quality translation. Computer-

assisted translation systems, such as translation memory systems, are discussed, and the development and testing of the TransType2 (TT2) system is described. TT2 allows for machine translation to be corrected by a user, and generates improved suggestions based on those corrections."

Sherry Southard

Making sense of media synchronicity in humanitarian crises

Muhren, W. J., Van Den Eede, G., & Van de Walle, B. (2009). *IEEE Transactions on Professional Communication, 52*, 377–397.

"This paper reintroduces concepts from sensemaking in media synchronicity theory (MST). It focuses on how media should support synchronicity to fit communication needs when making sense of a humanitarian crisis situation. Findings from interviews with senior management of humanitarian aid organizations in the Democratic Republic of the Congo show that, contrary to what is suggested by MST, low synchronicity media are not sufficient to support conveyance processes. Instead, information and communication systems should support these actors in connecting, building, and maintaining their networks of contacts. Also, information and communications systems need to be designed to support the observed sensemaking communication activities of noticing, updating, inquiring, triangulating, verifying, reflecting, enacting, and interpreting."

Gowri Saraf

Design

The ethic of exigence: Information design, postmodern ethics, and the Holocaust

Ward, M. (2010). *Journal of Business and Technical Communication, 24*, 60–90.

"Compared to ethics in technical writing, ethics in design has received less attention. This lack of attention grows more apparent as document design becomes 'information design.' Since Katz discerned an 'ethic of expediency' in Nazi technical writing,

scholars have often framed technical communication ethics in categorical terms. Yet analyses of information design must consider why arrangements of text and graphics have symbolic potency for given cultures. An 'ethic of exigence' can be seen in an example of Nazi information design, a 1935 racial-education poster that illustrates how designers and users co-constructed a communally validated meaning. This example supports the postmodern view that ethics must account for naturalized authority as well as individual actions."

Kimberly C. Harper

Education

Adapting to change: Becoming a learning organization as a relief and development agency

Smith, S., & Young, A. (2009). *IEEE Transactions on Professional Communication, 52*, 329–345.

"Disaster areas and developing economies put great demands on relief and development personnel to adapt efficiently to fast-changing conditions. We draw on experiences at Mercy Corps and the literature on learning organizations, adaptive expertise, and communities of practice to identify five systemic tensions that need to be balanced when designing effective learning solutions: (1) employees' desire to learn versus the pressures of the job, (2) investing in strategic learning initiatives versus the need to keep organizational operating costs low, (3) formal learning versus informal learning, (4) maintaining flexibility within a local context versus organization-wide standards that create efficiency and accountability, and (5) people versus technology. We offer examples of possible solutions to the individual and organizational learning challenge in relief and development organizations."

Gowri Saraf

The banality of rhetoric? Assessing Steven Katz's "The Ethic of Expediency" against current scholarship on the Holocaust

Ward, M. (2009). *Journal of Technical Writing and Communication, 39*, 207–222.

"Since 1992, Steven Katz's 'The Ethic of Expediency' on the rhetoric of technical communication during the Holocaust has become a reference point for discussions of ethics. But how does his thesis compare to current understandings of the Holocaust? As this article describes, Katz was in step with the trend two decades ago to universalize the lessons of genocide but his thesis presents key problems for Holocaust scholars today. Against his assertion that pure technological expediency was the ethos of Nazi Germany, current scholarship emphasizes the role of ideology. Does that invalidate his thesis? Katz's analysis of rhetoric and his universalizing application to the Holocaust are two claims that may be considered separately. Yet even if one does not agree that 'expediency' is inherent in Western rhetoric, Katz has raised awareness that *phronesis* is socially constructed so that rhetoric can be unethically employed. Thus, rather than remain an uncritically accepted heuristic for technical communicators, 'The Ethic of Expediency' can be a starting point for ongoing exploration into the ethical and rhetorical dimensions of the genre."

Valerie J. Vance

Complementing business case studies with humanitarian case studies: A means of preparing global engineers

Berndt, A, & Paterson, C. (2009). *IEEE Transactions on Professional Communication, 52*, 398–410.

"Business case studies have been a standard pedagogical tool in technical communication classrooms. However, the expansion of engineering practice—including the design and implementation of appropriate technology in the developing world—suggests the need to complement such studies. This paper analyzes three business and three humanitarian case studies. It highlights the complexities of audience and context that distinguish the humanitarian case studies, and it argues that incorporating humanitarian cases into technical communication courses would promote higher levels of learning, student engagement, and the global citizenship that will be requisite for all engineers in the twenty-first century."

Gowri Saraf

Contending with terms: "Multimodal" and "multimedia" in the academic and public spheres

Lauer, C. (2009). *Computers & Composition, 26*, 225–239.

"Scholars have begun naming and defining terms that describe the multifaceted kinds of composing practices occurring in their classrooms and scholarship. This paper analyzes the terms 'multimedia' and 'multimodal,' examining how each term has been defined and presenting examples of documents, surveys, web sites and others to show when and how each term is used in both academic and non-academic/industry contexts. This paper shows that rather than the use of these terms being driven by any difference in their definitions, their use is more contingent upon the context and the audience to whom a particular discussion is being directed. While 'multimedia' is used more frequently in public/industry contexts, 'multimodal' is preferred in the field of composition and rhetoric. This preference for terms can be best explained by understanding the differences in how texts are valued and evaluated in these contexts. 'Multimodal' is a term valued by instructors because of its emphasis on design and process, whereas 'multimedia' is valued in the public sphere because of its emphasis on the production of a deliverable text. Ultimately, instructors need to continue using both terms in their teaching and scholarship because although 'multimodal' is a term that is more theoretically accurate to describe the cognitive and socially situated choices students are making in their compositions, 'multimedia' works as a gateway term for instructors and scholars to interface with those outside of academia in familiar and important ways."

Daniel Drahnak

Digital underlife in the networked writing classroom

Mueller, D. (2009). *Computers & Composition, 26*, 240–250.

"This article offers a theoretical framework for 'digital underlife': the distal and potentially transgressive discursive activities proliferated by emerging technologies. Digital underlife is an adaptation of sociologist Erving Goffman's concept of underlife, which figured centrally in Robert Brooke's well-known study of writing activity in 1988. As emerging digital technologies fray the communicative bounds of traditional sites for teaching and learning, such as the classroom and the conference hall, we are confronted anew with a complex array of possibilities for giving and getting attention. Drawing on the work of Charles Moran and Richard Lanham, this article calls for a more receptive disposition toward the productive dimensions of digital underlife. The article promotes a stance that imagines productive digital underlife to be intrinsic to curricula that combine digital writing activity and rhetorical education, rather than short-selling digital underlife as mere distraction, as an impediment to learning, or worse, attempting to banish it altogether."

Daniel Drahnak

Dream bloggers invent the university

Tougaw, J. (2009). *Computers & Composition, 26*, 251–266.

"This essay focuses on the blogs authored by students in interdisciplinary, writing-intensive seminars on the art and science of dreaming at Queens College and Princeton University. The writing for these courses requires students to 'invent the university' in the sense that they must find ways to bridge the public and private, or the theoretical and the personal. I argue that blogs have the potential to help students develop strong and distinctive voices in the pursuit of intellectual inquiry—and that because of this, they can help teachers and scholars overcome the intellectual divides between the 'expressivist' and 'constructivist' pedagogies represented by Peter Elbow and David Bartholomae respectively. In the concluding section, I examine blog entries in which students recount instances in which they dreamed about our course readings (and other materials). These accounts are striking because they offer evidence that students were internalizing and synthesizing course material. To explain this internalization and synthesis, I turn to recent developments in cognitive theory that offer new ways of thinking about learning that I believe will help bridge the expressivist-constructivist divide and develop methods for teaching voice as a rhetorical element of writing, one that is essential to intellectual inquiry."

Daniel Drahnak

An empirical analysis of using text-to-speech software to revise first-year college students' essays

Garrison, K. (2009). *Computers & Composition, 26*, 288–301.

"Traditionally, composition experts have suggested reading drafts aloud as a means of revising essays; however, the method of reading drafts aloud is severely limited by a single factor: student writers do not always read what is on the page (Hartwell, 1985). Text-to-speech (TTS) software allows students to have their essays read to them so that the limiting factor of reading their own drafts aloud becomes minimized. TTS programs read what is written on the computer screen, and the result is that the students can 'hear' the problems of their essays as opposed to simply 'seeing' them. Nevertheless, composition researchers have not conducted any empirical studies to determine whether or not TTS is beneficial for 'local' and 'global' revision, nor have any studies been conducted to determine if TTS is beneficial for students above the fifth grade. This article documents an experimental study conducted at a southwestern university in the United States with fifty-one students to determine whether or not TTS software is useful in the revision process. The results show that users of TTS were as likely as users in the control group to make proofreading changes but less inclined to make local or global changes in the revision process, indicating that TTS possibly works well for proofreading but not necessarily as well for higher-order revision. Further research is recommended to determine TTS's effectiveness during a longitudinal study as well as for auditory learners and ESL students."

Daniel Drahnak

Engaging and supporting problem solving in engineering ethics

Jonassen, D. H., Demei, S., Marra, R. M., Young-Hoan, C., Lohani, J., & Lohani, V. (2009). *Journal of Engineering Education, 98*, 235–254.

"Learning to solve ethical problems is essential to the education of all engineers. Engineering ethics problems are complex and ill structured with multiple perspectives and interpretations to address in their solution. In two experiments, we examined alternative strategies for engaging ethical problem solving. In Experiment 1, students studied two versions of an online learning environment consisting of everyday ethics problems. Students using question hypertext links to navigate applied more perspectives and canons and wrote stronger overall solutions to ethics problems than those using embedded hypertext links. In Experiment 2, students engaged in a more generative task, evaluating alternative arguments for solutions to the cases or generating and supporting their own solutions. Both groups better supported their solutions and generated more counterclaims than control students. These studies focused on solving realistic case-based ethics problems as an effective method for addressing ABET's ethics criteria."

Christine Bates

Exploring negative group dynamics

Xia, X., Yuan, Y. C., & Gay, G. (2009). *Management Communication Quarterly, 23*, 32–62.

"Most previous social network studies have focused on the positive aspects of social relationships. In contrast, this research examined how the negative aspects of social networks in work groups can influence individual performance within the group. Accordingly, two studies were conducted to make this assessment. The first study examined the effect of negative relations and frequency of communication on performance among student groups. The second study investigated how the Five Factor Model of personality and position in adversarial networks interacted to influence individuals' performance. Although results of the first study indicated that frequent communication with others could make a person more likeable, consequently helping him or her perform better, the second study showed that those individuals

disliked by others were less likely to achieve a good performance rating, despite their conscientiousness, emotional stability, or openness to experiences."

Christine Cranford

Listening as a missing dimension in engineering education: Implications for sustainable community development efforts

Leyden, A., & Lucena, J. C. (2009). *IEEE Transactions on Professional Communication, 52*, 359–376.

"Although listening is valued in engineering education literature, it is conspicuously absent from engineering curricula. Using interview data, data from published literature, reflective instructional experiences, and the intersection of those three data sources, this study investigates two primary issues: (1) engineering students' sources of resistance to listening instruction in a sustainable community development initiative, and (2) benefits from such instruction. Findings feature a proposed theory of contextual listening and suggest that sources of resistance include the paucity of listening instruction in the engineering curriculum and curricular components that may devalue listening. Benefits of a listening intervention are described, and implications are discussed."

Gowri Saraf

Measuring leadership in self-managed teams using the Competing Values Framework

Zafft, C. R., Adams, S. G., & Matkin, G. S. (2009). *Journal of Engineering Education, 98*, 271–282.

"This study demonstrates how the application of the Competing Values Framework (CVF) to self-managed teams (SMTs) assists engineering educators to understand how to measure leadership within this context and facilitate an increased awareness of the students in a team, which will consequently increase effectiveness. Specifically, we analyzed data from the Managerial Behavior Instrument, completed by 81 engineering students who participated in self-managed teams for one semester. The instrument measured the use of the four leadership profiles of the Competing

Values Framework which then allowed the researcher to determine the presence of high or low behavioral complexity. Behavioral complexity determines the team's ability to utilize multiple leadership roles and subsequent effectiveness. The findings indicate that behavioral complexity does have a significant effect on performance but does not have a significant effect on the attitudes of team members. Overall, teams with high behavioral complexity earned a higher grade on their final team project than teams with low behavioral complexity. This study is significant for engineering education because it provides a theory and framework for understanding leadership in teams. By exploring the relationship between leadership in SMTs and effectiveness, educators and industry can better understand the type of leadership roles necessary for achieving a highly effective team. As a result, instructors can design their teamwork curricula and teamwork training based on the leadership strengths and skills of students which will then prepare students for industry upon graduation."

Christine Bates

The relationships between students' conceptions of learning engineering and their preferences for classroom and laboratory learning environments

Lin, C.-C., & Tsai, C.-C. (2009). *Journal of Engineering Education, 98,* 193–204.

"This study developed a survey entitled Conceptions of Learning Engineering (CLE), to elicit undergraduate engineering students' conceptions of learning engineering. The reliability and validity of the CLE survey were confirmed through a factor analysis of 321 responses of undergraduate students majoring in electrical engineering. A series of ANOVA analyses revealed that students who preferred a classroom setting tended to conceptualize learning engineering as 'testing' and 'calculating and practicing,' whereas students who preferred a laboratory setting expressed conceptions of learning engineering as 'increasing one's knowledge,' 'applying,' 'understanding,' and 'seeing in a new way.' A further analysis of student essays suggested that learning environments which are student-centered, peer-interactive, and teacher-

facilitated help engineering students develop more fruitful conceptions of learning engineering."

Christine Bates

Role negotiations in a temporary organization: Making sense during role development in an educational theater production

Kramer, M. W. (2009). *Management Communication Quarterly, 23,* 188–217.

"Negotiating the performance of an individual's role is an essential part of the assimilation process. Role negotiations consist of a two-part process: (a) negotiating a particular organizational role to perform and (b) negotiating that role's performance once it is assumed. Whereas previous research has failed to explore how these two processes interact, this participant-observation study used sensemaking to examine the communication individuals used both to negotiate a specific role in a temporary organization, an educational theater production, and then to negotiate that role's performance. The temporary organization provided a unique opportunity to observe both processes from beginning to end and allowed for examination of specific communication behaviors individuals used to make sense during both negotiations. The results provide insight into the relationship between negotiating a specific role and negotiating that role's performance as well as extending the understanding of sensemaking."

Christine Cranford

Information Management

Adapting to change through an initiatives program

Rauch, M. (2009). *Best Practices, 11,* 147–150. [Center for Information-Development Management]

A "department of 40 employees, which includes information developers, tools experts, editors, and managers, developed an initiative program that ensures continuous improvements to processes, products,

and skill sets for the department and individual contributors while increasing customer satisfaction …. This article presents examples of how the initiative program enabled our department to adapt to challenges, including new requirements for scheduling, deliverables, and translation."

Sherry Southard

Adding customer partnering to your information-development portfolio

Hackos, J. (2009). *Best Practices, 11*, 134–142. [Center for Information-Development Management]

Hackos explains customer partnering, "a technique used to design information products by creating a long-term relationship between representative customers and information developers …. Customer partnering offers technical communicators a way to unravel the complexity of information and organize large bodies of information into online documentation that is useful for its intended audience. By involving customers deeply in the documentation design process, communicators can meet customers' information needs as effectively as possible."

Sherry Southard

Automated translation for technical documentation—Can it deliver on the promise

Hurst, S. (2009). *Best Practices, 11*, 105 & 108. [Center for Information-Development Management]

"Until recently, most government and automated translation implementations have been in government and defense areas, but interest has gradually been rising among corporations that see the value it can add to their organizations. This article looks at the different uses of automated translation, how it is adding value to technical publications, and how … teams can prepare content for automated translation."

Sherry Southard

DITA, metadata maturity, and the case for taxonomy

Wlodarczyk, P., & Lemieux, S. (2009). *Best Practices, 11*, 127–131. [Center for Information-Development Management]

Some best practices discovered include "Start by identifying all your taxonomy use cases, …. [R]euse existing vocabulary, …. Authors are the best people to apply descriptive metadata, [and] …. Leverage the technology."

Sherry Southard

The DITA Olympiad: Approaching and managing a DITA migration collaboratively

Showers, K. (2009). *Best Practices, 11*, 133, 143–146. [Center for Information-Development Management]

Showers describes a technical publications development process created "for migrating our monolithic system documentation to DITA [Darwin Information Typing Architecture]-structured XML." The steps consist of project scope, technical design, project management, and editing.

Sherry Southard

Improving CMS archiving process and efficiency—Lean Sigma at Hewlett-Packard

Swart, S. (2009). *Best Practices, 11*, 109–122. [Center for Information-Development Management]

"Improving the efficiency of the CMS [content management system] archiving and new edition process for customer source content created several benefits: reductions [cycle time, number of steps, collections], … increase in customer satisfaction levels, [and] … less administrative overhead."

Sherry Southard

Indexing effectively in DITA

Vazquez, J. (2009). *Best Practices, 11*, 123–126. [Center for Information-Development Management]

The author describes "three methods of placing index terms, which helps readers retrieve information using a familiar paradigm, … how to leverage the reuse capabilities of DITA [Darwin Information Typing Architecture] to ensure the consistency of index terms throughout an information set and reduce … localization costs by providing a single source for all … index entries. … For a summary of the best practices for indexing DITA topics for translation, see http://www.oasis-open.org/committees/download. php/27581/IndexingBestPracticesWhitePaper.pdf." [Accessed 22 March 2010]

Sherry Southard

The role of the writer: Before and after the shift to structure

Mescan, S. (2009). *Best Practices, 11*, 152–155. [Center for Information-Development Management]

"This article discusses ways in which the role of the writer changes when implementing a structured writing and content management strategy and how managers can ease the fear of change …. The … discussion describes the role of a writer before and after … along with the affect it may have on a writer."

Sherry Southard

Why CCM is not a CMS: Or why you shouldn't confuse a whale with a fish

Schwartz, H. (2009). *Best Practices, 11*, 156–159. [Center for Information-Development Management]

"People are beginning to realize it is a category mistake to call some kinds of systems a 'CMS' (Content Management System), when what they are really referring to is a 'CCM' (Component Content Management) system …. [The author indicates the differences by discussing] the content management evolution …. [and] confusion between the CMS and CCM categories."

Sherry Southard

Management

Comparing competitive and cooperative strategies for learning project management

Nembhard, D., Yip, K., & Shtub, A. (2009). *Journal of Engineering Education, 98,* 181–192.

"Many organizations use project management to organize and administer resources in time and in place in an effort to optimize costs and meet certain constraints. These constitute cognitive skills acquired through training and experience that have successfully been shown to be trainable through simulation. However, past research on simulation-based project management training focused on individual learning. In this paper, we are interested in investigating whether a competitive or cooperative strategy is more desirable in using simulators for project management training. Several theories suggest that cooperative learning is more beneficial to learning than competitive learning. To investigate this problem, an experiment was set up based on the simulation-based Project Management Trainer (PMT) software. The results suggest that using both PMT cooperative and competitive strategies yield learning in project management. However, cooperative strategies yield better results in the overall outcome."

Christine Bates

Embracing left and right

Svensson, P. (2009). *Management Communication Quarterly, 22,* 555–576.

"The author explores how a tobacco firm in crisis engaged in crisis communication and image repair work in a highly polarized ideological milieu. Through an analysis of the tobacco firm's public statements produced in the aftermath of a 1997 lawsuit, the author demonstrates how the firm dealt with its milieu by exploiting and embracing both of the ambient ideological poles. By embracing these poles, the firm turned critique and opposition into discursive resources for its crisis communication. The author argues that political-ideological framing of organizational communication and discursive

appropriation of critique and opposition serve as critical foci for organizational communication scholarship."

Christine Cranford

Organizational newc(ust)omers: Applying organizational newcomer assimilation concepts to customer information seeking and service outcomes

Fonner, K. L., & Timmerman, C. E. (2009). *Management Communication Quarterly, 23*, 244–271.

"The process through which customers resolve uncertainty regarding their participative role in service transactions may be similar to the process that organizational newcomers experience as they gain role clarity and assimilate into organizations. This study applies organizational socialization literature to examine customer socialization, information seeking, role clarity, and service outcomes. Results (N = 328) indicate that (a) customers' perceived social costs have a stronger association with information seeking than does felt need for information, (b) overt and indirect information seeking is related to role clarity, and (c) role clarity mediates relationships between overt and third-party information seeking tactics and service outcomes. The report concludes with discussion of the benefits of applying organizational socialization frameworks to service contexts."

Christine Cranford

Professional Issues

Anti-employer blogging: An overview of legal and ethical issues

Markel, M. (2009). *Journal of Technical Writing and Communication, 39*, 123–139.

"Anti-employer blogs, those which criticize companies or their employees, are posing significant legal and ethical challenges for corporations. The important legal issue is the conflict between the employee's legal duty of loyalty to the employer and the employee's right to free speech. Although U.S. and state law

describes what an employee may or may not say in a blog, corporations should encourage employees to contribute to the process of creating clear, reasonable policies that will help prevent expensive court cases. The important ethical issue concerning anti-employer blogs is whether an employee incurs an ethical duty. The legal duty of loyalty, explained in a company-written policy statement that employees must endorse as a condition of employment, offers the best means of protecting the legal and ethical rights of both employers and employees."

Valerie J. Vance

Applied ethics in the engineering, health, business, and law professions: A comparison

Barry, E. B., & Ohland, M. W. (2009). *Journal of Engineering Education, 98*, 377–388.

"Applied ethics plays a critical role in engineering, health, business, and law. Applied ethics is currently a required component of the pre-practice education for these professions, yet the literature suggests that challenges remain in how we define, instruct, and assess professions-based ethics education …. Based on the ongoing debate associated with the instruction and assessment of applied engineering ethics, an exploratory investigation was performed to determine what could be learned by looking across professions …. Ethics, as an educational topic, can be very broad in scope. This study was limited to literature at the intersection of ethics terminology, historical development, instruction, and assessment within engineering, health, business, and law. Many references associated with each profession and the input of profession-specific content experts informed the literature survey …. Ethics within the engineering, health, business, and law professions have historically developed in isolation. Even case studies, which the engineering profession seems to have adopted from law, are framed differently within engineering. There are common lines of debate related to instructional methods, curricular methods, and instructor qualifications, but no profession has resolved these debates. A common trend in applied ethics research is a focus on assessment of student learning, rather than evaluation of instructional methods and/or curriculum

incorporation methods. Assessment tools have been developed and applied widely for many years in several of the health care sub-disciplines, business and law. An engineering-specific applied-ethics assessment tool has recently been developed, but has yet to see extensive application."

Christine Bates

Offshoring and the new world order

Hirschheim, R. (2009). *Communications of the ACM, 52*(11), 132–135.

"The author discusses the negative and positive aspects of offshoring by U.S. firms to meet their information technology needs …. [and] how information technology has been commoditized to become a set of skills that can be contracted to a low bidder. However, … the U.S. corporate community is imprudent in focusing on short-term profit and ignoring the resulting loss of skills …. The information technology field must accept that offshoring is not a passing trend and focus on opportunities for computer science students and a return to an emphasis on education in the U.S."

Sherry Southard

Power and trust in global virtual teams

Panteli, N, & Tucker, R. (2009). *Communications of the ACM, 52*(12), 113–115.

"The article discusses the question of how power is exercised in global virtual teams and how it can be used to effectively contribute to the development of trust. The insufficient attention given to power dynamics in the development of understanding with regard to virtual teams in the early 21st century is noted, mentioning that more should be done to explore the nature of power within virtual teams that are geographically distributed. The need for greater understanding with regard to computer-mediated interactions and the dynamics of virtual teams is also noted."

Sherry Southard

The social influences on electronic multitasking in organizational meetings

Stephens, K. K., & Davis, J. (2009). *Management Communication Quarterly, 23*, 63–83.

"Meetings serve an important function in organizational communication. Information and communication technologies (ICTs) have infiltrated meetings and allowed a new range of communicative behaviors to emerge. This cross-organizational study relies on key elements in the social influence model to predict variables that influence engagement in electronic meeting multitasking behaviors. The observation of organizational norms and the perceptions of others' thoughts concerning the use of ICTs for multitasking during a meeting explain a considerable amount of variance in how individuals use ICTs to multitask electronically in meetings. Implications for workplace ICT use in meetings and contributions to the social influence model are also discussed."

Christine Cranford

Research

Composition studies, professional writing and empirical research: A skeptical view

Driscoll, D. L. (2009). *Journal of Technical Writing and Communication, 39*, 195–205.

"This article builds upon the work of Richard Haswell's 'NCTE/CCCC's Recent War on Scholarship' by providing an alternative framework for empirical inquiry based on principles of skepticism. It examines the literature relating to empirical research and argues that one of the issues at hand is the perceived link of empirical research to positivism, which clashes with the dominant social constructivist paradigm. It draws upon classical rhetoric and the work of radial empiricist William James to formulate an alternative framework for empirical research based on skeptical principles."

Valerie J. Vance

A "smart" cyberinfrastructure for research

Parastatidis, S., Viegas, E., & Hey, T. (2009). *Communications of the ACM, 52*(12), 33–37.

"The article discusses the role of semantic computing in revolutionizing the way that humans interact with the large amounts of information available on the Web while conducting research. The development of semantic technologies that will allow machines to process, combine, and infer information from the vast amounts of Web-based data in ways that previously were only possible for humans is discussed, noting that such an advancement in artificial intelligence would improve the effectiveness of Web-based research."

Sherry Southard

Scientific Writing

The resources of ambiguity: Context, narrative, and metaphor in Richard Dawkins's The Selfish Gene

Journet, D. (2010). *Journal of Business and Technical Communication, 24,* 29–59.

"Richard Dawkins's *The Selfish Gene* illustrates the power of ambiguity in scientific discourse. The rhetorical and epistemic resources that ambiguity provides are most apparent at the level of metaphor but are also central to the exigency for Dawkins's argument and to the narrative form that the argument takes. Using ratios derived from Burke's dramatistic pentad, I analyze how ambiguous language helped Dawkins to link different theoretical conceptions of the gene and consequently posit connections between genes and organisms that had not yet been empirically established. I thus demonstrate at a conceptual and textual level how ambiguity contributes to the construction of novel scientific arguments. For Dawkins, ambiguity provided a discursive space in which he could speculate on connections and developments for which he did not yet have evidence, data, or terminology. Despite his insistence that his use of figurative motive language was simply a 'convenient shorthand' for more technical language, *The Selfish*

Gene demonstrates the powerful epistemological and rhetorical role that ambiguous metaphors play in biological discourse."

Kimberly Harper

The role of information and communication in the context of humanitarian service

Haselkorn, M., & Walton, R. (2009). *IEEE Transactions on Professional Communication, 52*, 325–328.

"Information and communication are playing an increasingly important and more sophisticated role in humanitarian-service activities involving logistics, organizational learning, health-care delivery systems, assessment, and education. This role is impacted by important trends and environments within which the humanitarian sector operates. These include a shift of focus from providing direct aid to capacity building, empowerment, and assessment; a shift in project focus from technical solutions to broader sociotechnical strategies; and increased emphasis on demonstrating effectiveness, improving efficiency, and collaborating with other organizations …. [The authors provide] some background on the role of information and communication in the context of humanitarian-service activities …. [and] important current trends in the humanitarian sector."

Gowri Saraf

Value-sensitive design and health care in Africa

Walton, R., & DeRenzi, B. (2009). *IEEE Transactions on Professional Communication, 52*, 345–358.

"In this paper, we describe our approach of using value-sensitive design to guide the design, development, and implementation of health information systems for use in rural areas of two developing countries in Africa. By using shared conceptual investigation, we are able to create a generalized list of stakeholders and values that span multiple projects without losing any of the power of the conceptual investigation. This process can be applied to other projects to develop a stronger set of

stakeholders and values. We also present a technical investigation of a vaccine delivery project in Sub-Saharan Africa and plans for an upcoming empirical investigation for a mobile-phone-based support tool for community health workers in East Africa."

Gowri Saraf

Technology

Assertions of expertise in online product reviews

Mackiewicz, J. (2010). *Journal of Business and Technical Communication, 24*, 3–28.

"In online consumer reviews on Web sites such as Epinions, laypeople write and post their evaluations of technical products. But how do they get readers to take their opinions seriously? One way that online reviewers establish credibility is to assert expertise. This article describes 10 types of assertions that online reviewers used (along with the three broader categories of these types), explaining the method used to test the types for reliability. This testing revealed that the types are reliable. This study lays the groundwork for understanding how reviewers construct expertise and, therefore, credibility, and for gauging readers' perceptions of reviews that contain these assertions."

Kimberly Harper

Design for effective support of user intentions in information-rich interactions

Albers, M. J. (2009). *Journal of Technical Writing and Communication, 39*, 177–194.

"With the rise of Web pages providing interactive support for problem-solving or providing large amounts of information on which a person is expected to act, designers and writers need to consider how a person interacts with increasingly complex information-rich environments and how they intend to use the information. This article examines some of the theory underlying why people make errors early in the problem-solving process when they form an intention. Since these errors are cognitively based and

occur before any physical action, it is harder to analyze their cause or incorporate changes to reduce them in a design. It examines factors which contribute to user errors and which designers and writers must consider to produce documents which reduce user errors in forming intentions."

Valerie J. Vance

Electronic paper's next chapter

Kroeker, K. (2009). *Communications of the ACM, 52*(11), 15–17.

"The article focuses on electronic paper technology for use in consumer electronic devices, such as electronic books. The author mentions that the biggest technological challenge is the electronic paper color displays. He suggests that new technology is necessary to render better-quality color inexpensively as well as to show moving images and other displays. The author discusses research into electronic paper technology including that by Prime View International, the company that manufactures the Amazon Kindle; Plastic Logic; and Philips Research."

Sherry Southard

The impact of the digital divide on e-government use

Bélanger, F., & Carter, L. (2009). *Communications of the ACM, 52*(4), 132–135.

"As governments worldwide increasingly implement e-government services, concerns about the potential impacts of the digital divide continue to grow. … It can be argued that two major divides exist: an access divide and a skills divide. Typically, those more likely to use e-government services include younger citizens, citizens with higher levels of income, citizens with higher levels of education, and citizens who use the Internet for other tasks. This confirms that the digital divide has a major impact on e-government usage. It is imperative that government agencies not only acknowledge this divide, but also take steps to diminish it."

Sherry Southard

Music, transtextuality, and the World Wide Web

Richards, R. (2009). *Technical Communication Quarterly, 18*, 188–209.

"This article sketches the significance of aurality in hypermedia, notes that the field of English studies is constructing the World Wide Web as a verbal and visual medium, and proposes a transtextual framework to aid technical communicators in designing musical hypermedia. Because the study of music on the World Wide Web is nascent, this article includes references to art and film music, whose theories and practices are substantially developed."

Valerie J. Vance

Presenting consumer technology with POP: A rhetorical and ethnographic exploration of point-of-purchase advertising

Cross, G. A. (2009). *Journal of Technical Writing and Communication, 39*, 141–175.

"Point-of-purchasing advertising (POP) is responsible for half of the purchase decisions made in the store. Because of 1) the influence of POP on the sale of technical consumer products and the economy; 2) our need to understand trends that shape technical and business communication; 3) the intermedial nature of POP (where spoken and written words work with place, visual image, physical structures, and multimedia integrated marketing campaigns); and 4) its theatrical and local nature, we need both a situated and theoretical exploration of POP. Drawing upon three months' participant observation in advertising, I describe a POP composing process in an integrated marketing campaign. Cognitive responses to layout and the interrelation of rhetorical canons are considered for preparing communication for a marketplace that is three-dimensional variegated, noisy, and peripatetic."

Valerie J. Vance

Privacy and security: Usable security: How to get it

Lampson, B. (2009). *Communications of the ACM, 52*(11), 25–27.

"The author argues that there is no user model for computer security and that security experts, economists and cognitive scientists should combine their efforts to achieve one. The author maintains that computer security involves risk management in that the user must balance the costliness of security in terms of economics and time against the possible loss of information. He maintains that these costs must be quantified so that users can rationalize their expense and vendors can address user needs. He also mentions the need for system accountability as well as a free flow of information."

Sherry Southard

Privacy requires security not abstinence: Protecting an inalienable right in the age of Facebook

Garfinkel, S. (2009). *Technology Review, 112*(4), 64–71.

Garfinkel argues for greater Internet security of personal identity data, beginning with a brief history of the concept of privacy that assesses how various constitutional amendments relate to privacy, and describes the past 40 years of federal regulations on privacy. Despite current regulations, much of the responsibility for preserving personal data security currently rests with the individual citizen. Too often, citizens are forced to choose between convenience and privacy. Computer and telecommunications technology advances have created gaps in data security that can be fixed by technology and additional federal regulation. Specifically, the solution is a strong identity system that is free to use and backed by the government. Americans need to let go of their long-standing resistance to national identity card-type proposals because unsecured systems currently access personal identity information on a daily basis.

Gary Hart

Quantifying the benefits of investing in information security

Khansa, L, & Liginlal, D. (2009). *Communications of the ACM, 52*(11), 113–117.

"The authors discuss their research into the efficacy of investing in information security in which they measured the revenues of information security companies that control a primary share of certain information security market segments. The three key market segments were content security, identity and access management (IDAM), and network security. The authors found that increased investment in information security conferred a higher degree of protection and reduced the severity of attacks that could adversely affect corporate stock prices."

Sherry Southard

Search me: Inside the launch of Stephen Wolfram's new "Computational Knowledge Engine"

Talbot, D. (2009). *Technology Review, 112*(4), 32–39.

"This article explores and assesses a 'computational knowledge engine,' called Wolfram Alpha that is being pioneered by Stephen Wolfram. Basically, this engine computes answers from internet-available data rather than simply list web pages in response to specific questions. This approach involves something called 'data curating,' for which data is essentially reformatted and/or depicted by Wolfram Alpha so that it can be accessed using expanding number of datasets, elaborate calculator, and natural language interface. Data curating is necessary because the semantic web has not occurred as he and others envisioned that it would several years ago. If it had, we would be able to search for and obtain the data we need in the form and context desired. Talbot describes examples of how much more powerful the *Wolfram Alpha* search engine is than other current search engines such as *Google* and *Wikipedia*." [Ed.: Wolfram Alpha works for only factual data; for more information, visit http://www.wolframalpha.com/screencast/introducingwolframalpha.html.

Gary Hart

Security in dynamic Web Content Management Systems applications

Vaidyanathan, G., & Mautone, S. (2009). *Communications of the ACM, 52*(12), 121–125.

"The article discusses the management of information security with regard to dynamic Web Content Management Systems (WCMS). The paper presents strategies for integrating the goals of information security with eight dimensions of WCMS, including the proper configuration of WCMS on the server, the usage of non-persistent cookies or short-duration persistent cookies transmitted through a secure encrypted connection, and the proper secure design of Web-based forms. A security framework is developed, based upon the integration of security with the eight dimensions of WCMS, and the security of the Web architecture at the level of the WCMS software applications is addressed using the framework."

Sherry Southard

The state of corporate Web site accessibility

Loiacono, E. T., Romano, Jr., N. C., & McCoy, S. (2009). *Communications of the ACM, 52*(9), 128–132.

"In this study, we extend a previous CACM paper that surveyed accessibility at a snapshot in time with historical and additional perspectives on accessibility of Fortune 100 (F100) Web sites …. The F100 Web sites were chosen for the usual reasons this population is studied, but also because we expect the largest and most profitable companies to be the most likely to have the resources and personnel to ensure web site accessibility. The unit of analysis was the top-level home page for each Web site. This is an optimistic approach as companies may put their best foot forward here and then fail to consider accessibility for lower level pages…. Beyond, the graying of America and most of Europe, the number of people with visual and indeed all disabilities is growing and these consumers have significant buying power."

Sherry Southard

Understanding public policy development as a technological process

Williams, M. (2009). *Journal of Business and Technical Communication, 23*, 448–462.

"This article discusses public policy writing as a genre of technical communication and, specifically, public policy development as a technological process. It cites DeGregori's theory of technology to demonstrate the shared invention processes of technology and public policy, the work of public policy scholars to describe the policy-development process, and the work of human-computer interaction scholars to identify cognitive models of public policy development as a technological process. The article concludes with a discussion of e-rulemaking Web sites and the role of technical communicators in creating these blended spaces."

Kimberly C. Harper

Why Web sites are lost (and how they're sometimes found)

McCown, F., Marshall, C., & Nelson, M. (2009). *Communications of the ACM, 52*(11), 141–145.

"The authors discuss their creation of a web-repository crawler, Warrick, that restores lost web sites from Internet Archive, Google, Live Search (now known as Bing) and Yahoo, collectively known as the Web Infrastructure (WI). They present the results of their online survey surrounding lost web sites and their after-loss recovery. Respondents had either personally lost one of their web sites or had recovered someone else's web site. They found that esoteric sites were being restored. They suggest that technology to preserve digital materials will become more inclusive and seamless."

Sherry Southard

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